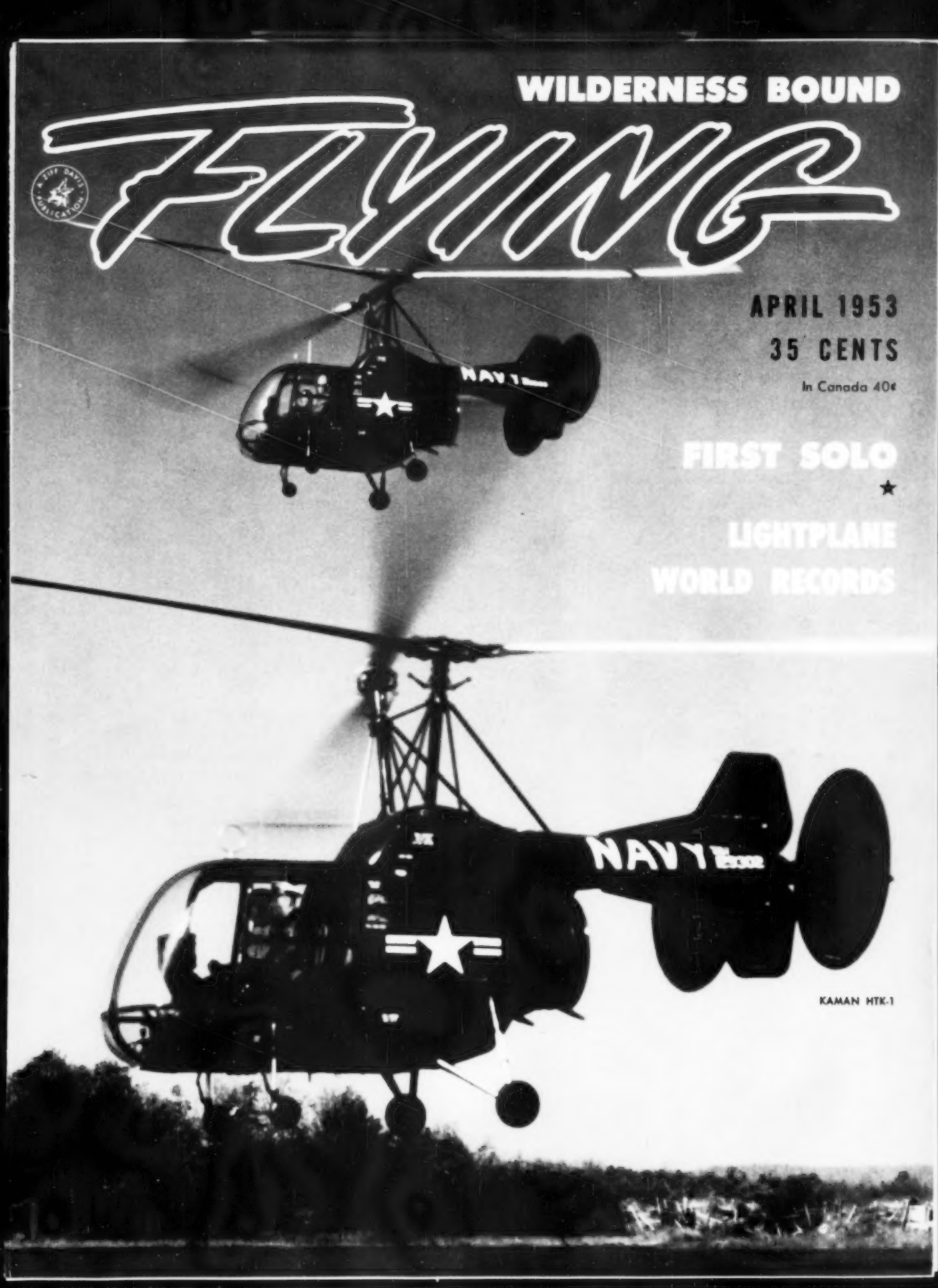
WILDERNESS BOUND

FLYING

APRIL 1953
35 CENTS
In Canada 40¢

FIRST SOLO
★
LIGHTPLANE
WORLD RECORDS



KAMAN HTK-1

CHECK YOUR FUTURE IN AVIATION

TODAY'S LONG-RANGE AVIATION PROGRAM OFFERS GOLDEN OPPORTUNITIES TO THE YOUNG MEN OF AMERICA
...every major airline, manufacturer and allied industry need qualified, well-trained specialists *desperately!*

CHECK THE CAREER YOU WANT...START ON YOUR WAY TO BIG EARNINGS AND A BRILLIANT, SECURE FUTURE *TODAY!*

EMBRY-RIDDLE OFFERS YOU COMPLETE 6-MONTHS TO 2-YEAR COURSES...*TO MEET THIS BIG DEMAND!*

AIRCRAFT & ENGINE MECHANICS Vast numbers of properly trained A & E Mechanics are urgently needed. Our C.A.A. approved school with a quarter-century experience assures your quickest advancement. Embry-Riddle students learn fast with modern equipment, including jet ... live aircraft.

AERONAUTICAL DRAFTING AND DESIGN Embry-Riddle's accelerated 12-mo. Aeronautical Drafting and Design Course provides finest training available. Technicians with management responsibility enjoy highest salaries!

COMMERCIAL PILOT Embry-Riddle trained pilots benefit from our years of experience with 30,000 students...the best instructors, up-to-date aircraft, superb year-'round flying weather. Also instrument and instructor's ratings.

A & E COMBINED WITH COMMERCIAL PILOT Airmen with dual pilot-engineering ability are needed by aviation companies and operators. Embry-Riddle combination training offers you the most in your aviation career.

EXECUTIVE PILOT Must have two years of college or equivalent training to enroll. 18-month course. Complete course includes thorough training in Aeronautical Technology, preparation for Commercial Pilot Certificate with Instrument and Multi-engine Ratings and A & E Mechanics Certificate.

Here's how Embry-Riddle training prepared one young man...

from AERO DRAFTSMAN to VICE-PRESIDENT in JUST FOUR YEARS

That's the story of a young man who came to us just four years ago... fresh out of school... his selection of an Embry-Riddle course in AERO DRAFTING AND DESIGN and the excellent training he got here opened the road to steady advance and big pay!

You, TOO, can step right into an *Exceptional Opportunity*... Classes are beginning now... write for complete information TODAY!

TRAINING AUTHORIZED UNDER G.I. BILL

CHECK course you are interested in and
MAIL THIS ENTIRE AD to Dean of Admissions—Dept. 94
Embry-Riddle School of Aviation Miami 30, Florida

NAME _____
ADDRESS _____
CITY _____
STATE _____ AGE _____

TRAIN IN MIAMI • AIR CAPITAL OF THE WORLD

Embry Riddle
International
SCHOOL OF AVIATION

AIRPORT SERVICE OPERATORS CUT COSTS

when they buy supplies and materials from Air Associates because—

- Virtually any aviation products their customers may need can be obtained from Air Associates.
- Numerous products needed from many supplies manufacturers are covered by *one* order . . . *one* delivery . . . and *one* payment.
- Deliveries are made from convenient locations throughout the country.

These Aviation Supplies Divisions of Air Associates are backed by 25 years of experience in meeting the requirements of airport service operators:

216 Union Street, Hackensack, New Jersey
5315 West 63rd Street, Chicago 38, Illinois
3214 Love Field Drive, Dallas 9, Texas
1231 Air Way, Glendale 1, California
International Airport, Miami 48, Florida

Manufacturers and Distributors of Aviation Materials and Equipment

AIR ASSOCIATES

FLYING is published monthly by the Ziff-Davis Publishing Company at 185 N. Wabash Ave., Chicago 1, Illinois. Entered as second-class matter Sept. 8, 1942, at the Post Office, Chicago, Ill., under the act of March 3, 1879. Authorized by Post Office Department, Ottawa, Canada, as second-class matter.
SUBSCRIPTION RATES: U.S., Canada, Mexico, South and Central America and U. S. Possessions, $4.00 for twelve issues; in British Empire and all other foreign countries, $5.00 for one year (12 issues). POSTMASTER—Please return undelivered copies under Form 3579 to 64 E. Lake St., Chicago 1, Ill.

FLYING's FAMILY

LEE WULFF, who concentrates on sporting opportunities in the northeastern U.S. and Canada in "Wilderness Bound" (p. 12) is just as much at home angling for bonefish in the Florida Keys, battling marlin in the Gulf of California or gunning for geese in North Caroline.

Regarding the airplane as indispensable to the role of the "compleat sportsman," Lee took up flying, soloed in eight days, earned his private pilot's license in less than three weeks, and five weeks after his first lesson flew his *Cub* seaplane 1,000 miles (including 100 miles over water) to Newfoundland. By now, he's logged 1,700 hours (mostly bush flying on floats) and holds U.S. and Canadian commercial tickets.

In Lee's design for living, it's hard to say where the work ends and the play begins. All of his fishing and hunting trips are recorded on 16 mm movie film, then made into action-packed features which, with Lee as commentator, are highly regarded on the national lecture circuit.

A native of Valdez, Alaska, Lee was graduated from Leland Stanford University as a civil engineer, studied art in Europe and now makes his home in New York State close to the Vermont border. As originator of the Gray Wulff and White Wulff, he's assured lasting fame among dry fly fishermen.

• • •

DICK STAPLES, whose pride in The Tennessee Plan is set forth on p. 14, is a broad-A New Englander, transplanted in recent years to the Volunteer State.

Born in Whitman, Mass., he was an enthusiastic skiier and model builder when, at the age of 14, he started to fly at the local airport. He soloed at 16, joined the Army Air Corps at 18 and, by age 19, was flying four-engine bombers. Most of his wartime service was spent training combat crews as pilot-instructor.

Dick Staples

On his return to the civilian scene Dick operated a seaplane base at Methuen, Mass., then was associate manager of the Nantucket Memorial Airport. It was in 1948 that he entered the University of Tennessee as a law-business student. Since graduation he has stayed on, as flight coordinator of the University's flying program, and as presiding officer of the fledgling Tennessee Aviation Association and Tennessee Aviation Education Association.

THE COVER: Kaman Aircraft's intermeshing rotor HTK-1 helicopter, now in service with the U. S. Navy and Marine Corps.

APRIL, 1953 VOLUME 52, NUMBER 4

FLYING

Reg. U. S. Pat. Off.

Editor and Publisher
GILL ROBB WILSON

Assistant to the Editor
C. L. HAMILTON

Associate Editor
B. R. WOLFE

Contributing Editors
ED HOADLEY BILL RENSHAW

Advertising Manager
TET SUITO

Art Director
FIL GIULIANO

EDITORIAL ADVISORY BOARD

Personal Aircraft
J. B. (Doc) HARTRANFT, Jr.

Air Force Affairs
Maj. Gen. HUGH J. KNERR (Ret.)

Navy Affairs
Rear Adm. H. B. MILLER (Ret.)

CONTENTS

Chocks Away, *An Editorial* 10
Wilderness Bound . . . . . *Lee Wulff* 12
The Tennessee Plan . . . . . *Richard A. Staples* 14
Rockets in the Arctic . . . . . *J. Gordon Vaeth* 16
Night Check-Out . . . . . *Frank L. Harvey* 18
Contract Schools . . . . . *Gordon C. Sleeper* 19
First Solo . . . . . *photos by Carroll Seghers, II* 22
The Tuttle Report . . . . . *Douglas E. Tuttle* 24
The Royal Observer Corps . . . . . *Charles Sargeant* 26
Learning the Hard Way . . . . . *Jose Valbuena* 28
Private Flyer in Sweden . . . . . *Bennett L. Jackson* 29
Needle Nose . . . . . *Terry Kay* 30
Lightplane World Records . . . . . *Charles L. Davis* 32
Helicopter Ambulance . . . . . *Harry Lever* 34
The Irish Do It, Too . . . . . *Norman Ashe* 35
Aircraft Brokers . . . . . *Roy Carlton* 36
Have You Seen? 38
I Learned About Flying From That! No. 159 . *Lt. Brian Power-Waters* 40

FLYING FEATURES

Mail Box 6
AOPA News 41
NATA Operators' Corner 42
CAP Wing Talk 48
Flying Farmers . . . *Bill Renshaw* 56
Red Hot News 59

Photo Credits 62

Ziff-Davis Publishing Company

WILLIAM B. ZIFF
Chairman of the Board

B. G. DAVIS
President

GEORGE E. CARNEY
Secretary-Treasurer

Vice-Presidents
H. J. MORGANROTH, *Production Director*
LYNN PHILLIPS, Jr., *Advertising Director*
H. G. STRONG, *Circulation Director*

Member of the Audit Bureau of Circulations

Editorial and Executive Offices, 366 Madison Ave., New York 17, N. Y.
Branch Offices: 185 N. Wabash, Chicago 1, Ill.; Statler Center, 900 Wilshire Boulevard, Los Angeles 17, Calif.

SUBSCRIPTION SERVICE: All communications concerning subscriptions should be addressed to Circulation Dept., 64 E. Lake St., Chicago 1, Ill. Subscribers should allow at least two weeks for change of address.

CONTRIBUTIONS: Contributors are advised to retain a copy of their manuscripts and illustrations. Contributions should be mailed to the New York Editorial Office and must be accompanied by return postage. Contributions will be handled with reasonable care, but this magazine assumes no responsibility for their safety. Any copy accepted is subject to whatever adaptations and revisions are necessary to meet the requirements of this publication. Payment covers all author's, contributor's and contestant's rights, title, and interest in and to the material accepted and will be made at our current rates upon acceptance. All photos and drawings will be considered as part of the material purchased.

Copyright 1953 by Ziff-Davis Publishing Company. All rights reserved.

because you'll like tricycle gear

Because the tricycle landing gear rolls straight *automatically*, it gives high performance aircraft the simplest, easiest ground handling characteristics possible. That's why every modern airliner, every jet airplane has this type of gear.

And that's why the fast, far-ranging Piper Tri-Pacer has this safety gear, too. It's the finest insurance for your aircraft investment. You don't worry about cross-winds, or ground-loops. You don't have to stall to land. You can operate in higher winds: you see much better taxiing. Take offs and landings are virtually automatic!

So preponderant is the preference for tricycle gear that the Tri-Pacer sells 14-1 over the Pacer still available with the old-type tailwheel landing gear for special purpose flying.

And so enthusiastic is the flying public over the 1953 Piper line of fast, quiet, economical 4-place business planes and the famous, versatile Super Cub that Piper production is now higher than that of any civil aircraft manufacturer in the past five years.

For speed and comfort with *economy* nothing matches the new 1953 Tri-Pacer. See it, fly it at your nearest Piper dealer's.

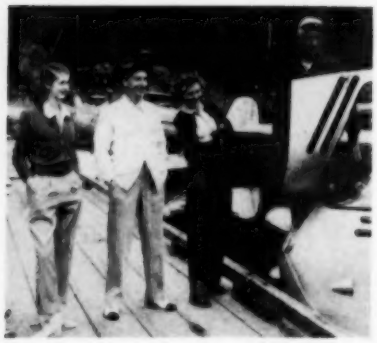
One of three great improvements for safety, utility and flying ease

PIPER

ONLY THE PIPER SUPER CUSTOM TRI-PACER has all these features plus two-way VHF radio, 2-band LF receiver, homing loop, full instrumentation and gyros, over 125 mph cruising speed – still $3,000 less than any other 4-place plane not even as fully equipped! Send for new full-color catalogue, Piper Aircraft Corporation, Lock Haven, Pa. Dept. G-3

MORE PEOPLE HAVE BOUGHT PIPERS THAN ANY OTHER PLANE IN THE WORLD

MAIL BOX



Ann Donogh, L. K. Bye, Mrs. Stan Donogh and Stan.

SALUTE TO STAN DONOGH

As a result of a single flight, Stan Donogh, northwest group manager for Sears, Roebuck and Co., sold all three of his passengers on the idea of personal plane ownership. We claim a record for Mr. Donogh.

The flight was from Portland to Seattle, and the passengers were Rex L. Allison of Allied Stores Corp., Attorney Eli Dorsey and Jerry Bryant, nationally known builder of boats. None of the three was a pilot. All are now. Mr. Allison bought a *Navion*, Mr. Dorsey an Ercoupe and Mr. Bryant a *Seabee*.

Flying only five years himself, Stan Donogh has logged more than 2,600 hours and is a top hand at both land and sea flying. Most of his flying is done in Alaska and British Columbia. Owner of a Grumman *Goose* and a Republic *Seabee*, Donogh, who still holds a world's speedboat record for Class-E outboards, says his planes are vital tools of his business. In fact, the Sears Co. owns four planes—two DC-3's and two twin-Beeches.

IRVING PETITE

Issaquah, Wash.

ICAO EXPLAINS

I read with much interest and pleasure the article on British Flying Clubs by Major Oliver Stewart (Clubs Are Trumps in the U.K., FLYING, January). One statement made by Mr. Stewart, however, has somewhat disappointed me because he implies that ICAO's activities are likely to result in more stringent requirements for the private pilot's license and particularly in the requirement for a minimum of 40 hours' flying before the license can be granted.

One of ICAO's prime objectives—it is something for which we work here all the time, I assure you—is to urge the removal, or at least the relaxation, of any practices thought to be unnecessarily restrictive. The present ICAO regulations call for a total of 40 hours flight time for the private pilot's license and this figure can be reduced by 25 per cent, to 30 hours, if it is undertaken at an approved training center or flying club. If the person concerned has had experience in gliders, even further reductions are possible.

It is true that many countries require, in their national laws, more flying experience than this, but I should like to point out that this additional requirement has never been sponsored by ICAO. There have been no suggestions made, either formally or informally, at any ICAO meetings within the last four or five years, that these flying hours should or need be increased.

FLYING has an authoritative place in the world of aviation and I was therefore somewhat disturbed to note this suggestion in one of your articles. I should like to assure you that, in this respect, any fears this article may give rise to are unnecessary.

S. G. COOPER
Public Information Officer
International Civil Aviation Organization
Montreal, Canada

LUCKY KIDS

After reading "The Lucky Kids of Chula Vista" (FLYING, January), I think Walter Nanni had a wonderful idea when he organized the South Bay Flying Club.

Before I recently enlisted in the Air Force I had been working on my private's ticket, which was costing me $10 an hour for dual lessons. By the time I receive my license the cost will total more than $275, which is a large sum more than it costs the kids of Chula Vista.

It would really be a swell idea if all public high schools would consider a flying program right along with football and basketball teams. Why not?

A/B BOB HACKBART

Parks AFB, Calif.

JOB FOR SCHOOLS

Just by chance I read the article by Charles Burton, "Let's Give Aviation Back to the People" (FLYING, August).

My son, 16 years old, has been vitally interested in aviation for the past two years. Prior to that he was building and flying model airplanes. He joined the CAP before he was 15 because of his desire to fly and become a pilot. During the past few months, I can see his interest in flying taking a back seat to cars because of his not getting the opportunity of flying and learning. If the plane that the CAP group or wing has available is in flying condition, the adults take over.

It seems to me the U.S. Air Force is not doing much to correct the situation among the great potential of boys of Junior and Senior High School age.

A vast amount of money is being spent by the Air Force training men. If some thought were given to training boys in high school they would get men in the Air Force already fundamentally trained and with some ready to go direct into pilot training.

There are any number of boys in the Rosemead High School, Rosemead, Calif., who would jump at the chance to take an aviation course. The boys cannot afford the $4 to $8 per hour that it takes to get flying experience from a flying school.

As a result, boys are turning to hot-rods. I would rather see my son stunting around the sky than slamming around the busy streets in a jalopy and I am all for him going out for aviation—but where can he get the opportunity? Pressure should be brought on the government to put aviation courses into high schools which have adequate facilities and the enrollment to assure success of the course.

I venture to say that if my son does not have the chance to keep up his flying interest he will gradually drift away and become more interested in cars. In my mind, that is what is happening to America's youth. All I can say is, don't blame the youth.

ARNOLD H. DOWNS

San Gabriel, Calif.

Betsy Woodward (right) and Mrs. Anna Saudek.

WOMEN'S SOARING RECORD

An International Women's Soaring Record held by Russia since 1939 has been broken by Miss Betsy Woodward of Santa Monica, with Mrs. Anna Saudek of Los Angeles as passenger. Participating in Southern California's 11th Annual Soaring Contest, the girls flew a Pratt-Reid sailplane purchased from war surplus.

The experts rode the thermals from El Mirage Field, Calif., to McCarran Field, Las Vegas, Nev., a distance of 172 airline miles. This flight beat by 33 miles the record for the International Women's Multiplace Distance to a Predetermined Destination, held by Russia.

Weather was far from ideal for soaring when the record was made. At one point, the ship descended to an altitude of 1,000 ft. Just as the girls were preparing to land, they found a thermal, allowing them to continue to their destination. The flight lasted four and one-half hours.

FRED SWARTZ

Los Angeles, Calif.

(*Continued on page 8*)

It's the size of the FIGHT in the man!

That's right! In the U. S. Air Force, it's not the size of the man in the fight—it's the size of the FIGHT IN THE MAN! And Aviation Cadets *must* have plenty of it. For Cadet training is rugged. If you're good enough . . . tough enough . . . smart enough . . . if you can take it while you're learning to dish it out, you can have one of the most fascinating careers in the world. You'll be equipped to fly the latest, hottest planes. You'll be prepared to take your position as an executive, both in military and commercial aviation as well as in industry. And while you're helping yourself you'll be helping your country.

WIN YOUR WINGS! It takes only a little over a year to win your wings as a Pilot or Aircraft Observer (Navigator, Bombardier, Radar Operator or Aircraft Performance Engineer). But at the end of your training you graduate as a 2nd Lieutenant in the Air Force, with pay of $5,300.00 a year.

ARE YOU ELIGIBLE? To qualify as an Aviation Cadet, you must have completed *at least* two years of college. In addition, you must be between 19 and 26½ years, unmarried, and in good physical condition.

New Aviation Cadet Training Classes Begin Every Few Weeks!

HERE'S WHAT TO DO:

1. Take a transcript of your college credits and a copy of your birth certificate to your nearest Air Force Base or Recruiting Station. Fill out the application they give you.
2. If application is accepted, the Air Force will give you a physical examination.
3. Next, you take a written and manual aptitude test.
4. If you pass your physical and other tests, you will be scheduled for an Aviation Cadet training class. The Selective Service Act allows you a four-month deferment while waiting class assignment.

WHERE TO GET MORE DETAILS: Visit your nearest Air Force Base or Air Force Recruiting Officer. Or write to: Aviation Cadet, Headquarters, U. S. Air Force, Washington 25, D.C.

U.S. AIR FORCE

MAIL BOX

(Continued from page 6)

GRIPE OF PILOT SHIPE

It is disturbing to note how slight is the emphasis on truly light planes. Many of the personal models sold today are casually described as light aircraft but are not so either in weight, horsepower or cost.

I am convinced that a survey of potential flying students and personal plane owners would show a market worth consideration for the truly light plane—something on the order of the old E-2 *Cub* or the Curtis Junior.

EARL G. SHIPE
Valley Airways, Winchester, Va.

KITS, CONTINUED

The many comments on airplane kits have given me no end of interest, and here are a few ideas that might be put to use.

Back in 1942-43 I took a class in aircraft construction which taught me that to make a wing rib, for example, all you have to do is make a mold or jig of the rib, then fit the rib parts in their places, glue and nail them together and you have another rib as good as the first one.

My idea, therefore, is to have the airplane designers design some small aircraft, supply a jig or give instructions on how to make them, and let the novice plane builder build as much of the plane himself as possible.

Up in Afton, Wyo., the Call Aircraft Corp. really has the idea for building an entire airplane by hand. I went through their plant a few years ago and was surprised at how little equipment they used. The bodies are welded together on a couple of jigs (one at the nose and one under the tail) as the only support.

I am not a pilot nor do I fly, but I would like to if I could afford to have something inexpensive to own after I learned how.

DEE L. SAVAGE
Conda, Idaho.

I for one would be sure to get a kit plane for myself, and I'm sure there are several other people, just in this part of California, who would do the same. Let's whip it up.

HAROLD KEENER
Bieber, Calif.

I sure hope some manufacturer will put up a kit so we can all get a hand in the game.

DOUG MCKENZIE
New Westminster, British Columbia

Why couldn't some manufacturer of an established lightplane make a kit-form plane (e.g., Piper's J-3 *Cub*) with an assembled fuselage? In some states wooden construction would not be permissible.

There are thousands of men who learned flying under the G.I. Bill but didn't continue afterward because of the cost.

If someone could bring 50 per cent of these men back into the air, I am sure there would be a dollar or two in it somewhere, as well as a few more contented people.

HARRY J. JENSEN
Norwalk, Conn.

If enough kit-minded people speak up, I might be able to raise enough capital to market a newly patented Safety Plane in kit form, for $500, less engine and prop. The horsepower rating will be in the 40-65 hp range. Both single and two-

seaters, side by side and tandem, will be available. The construction will be steel tubing, fabric covered. I am enclosing a snapshot of the Safety Plane, which has been test flown, and will gladly furnish more information.

RENE CHARETTE
213 Besserer St.
Ottawa 2, Ontario, Canada

Regarding construction of home-built aircraft—I am in the process of reorganizing the "Experimental Aircraft Owners and Pilots Association" here in Milwaukee. I started the organization in 1951, then was sent to Korea as a C-47 pilot.

Since returning home I have had numerous requests to reactivate the organization, and with the backing of our local CAA inspectors we have had considerable interest in the building of experimental aircraft. In fact we have 13 home-built, experimental aircraft in the Milwaukee area either flying or under construction. I have completed one and flown it for 75 hours and have another nearly completed.

I would appreciate hearing from individuals who are interested in the building of home-made aircraft and the association. From some of the performance we get in home-built aircraft, manufacturers could take note.

PAUL POBEREZNY
3801 S. 56th Street
Milwaukee 14, Wisc.

• *In view of the great number of readers who have expressed an interest in home-made planes, we're happy to report the name and address of a pilot who is backing the wish with action.*—ED.

CIRCULAR TAKE-OFF

It was a hot August day when we landed our Luscombe on a small lake in upstate New York. With two of us, beach gear, food and a full tank I knew the *Silvaire* would be sluggish taking off from the slick, glassy water. On previous trips two-thirds of the lake was plenty of room, but after several attempts on one float it was no go. On the advice of a local flier I started my run downwind, eased the right float into the air, and made a 180° turn into the wind. By the time I was opposite my starting point I was in the air.

If the turn is made gradually, avoiding a skid, no speed will be lost. One rule—keep the lake on your left, so that room will be left if a stop is necessary. I have tried this many times since, and have found it safe and practical on lakes once considered too small for use.

CPL. JOHN E. ARTHUR, JR.
U.S. Zone, Germany

SMOKE SIDELIGHT

Your story on the Smoke Jumpers of Missoula, Mont. ("Men and Timber," FLYING, July), was good and the subject well covered except for a period between 1943-45 when there was a serious manpower shortage in civilian jobs.

In 1943 the Forest Service turned to the use of conscientious objectors to military service as volunteers for smoke-jumping. By 1945, 250 conscientious objectors were making fire jumps all over the northwest U.S. I was among those unpaid jumpers in the summer of '45, making 14 jumps, six of them fire jumps.

I felt this service to the welfare of our timberland was worthy of mention.

D. RUSSELL PALMER
Wilmington, Del.

HANDS ACROSS THE BORDER

I am a member of the air cadets in Canada and would like to meet (via mail) a member of the CAP cadets, Texas wing, to talk and swap aircraft photos and information of RCAF and USAF.

GORDON WILLIAMSON
406 St. Clarens Ave.
Toronto, Ontario, Canada

LIAISON DATA?

For some time now I have been a fan of FLYING. At present I am a mechanic for our battalion's L-19A. Prior to my Army career I was employed by United Airlines. I have done some flying in lightplanes and even had the opportunity to fly with the late Bill Odom.

I would like any information your readers could furnish me about liaison planes from the L-1 through the L-23. Pictures and specifications are welcome.

PFC WILLIAM G. REINMULLER
Hq & Sv. Co., 322 Tk.Bn. (HV)
APO 46 c/o Postmaster, New York, N. Y.

EMPTY SEATS

All of us have seen teen-agers hanging around airports, especially the smaller fields. What attracts them? I think the primary reason in their interest in flying and the hope that someday, someone will invite them for a plane ride. Imagine how these youngsters feel when they see an operator or private plane owner cranking up a ship for a short trip with unoccupied seats aboard. Few youngsters are bold enough to ask, but I have yet to see one refuse when invited.

The Civil Air Patrol is dedicated to interesting young people in aviation, and yet I have seen CAP members take off with empty seats, with CAP Cadets wishfully looking on at the edge of the field.

This is an appeal to all pilots—private plane owners, CAP members, operators, etc.—whenever you can, extend invitations and use all the seating capacity you have. It won't cost you any more and the boost it will give aviation in the years to come will be worthwhile I am sure.

ROBERT W. FORTIN
Peterborough, N. H.

SYMBOL

The trade mark is literally the herald of American business . . . the symbol of an established institution. ➤ ➤ ➤ It is the basic spirit of Democracy at work . . . it means many things. It exemplifies tradition, resourcefulness, free enterprise, initiative. At Republic it marks the milestones of progress in the vital field of producing materials necessary for the defense of Democracy. ➤ ➤ ➤ We are now making deliveries of the new swept-wing F-84F ***THUNDERSTREAK*** *jet fighter. This latest, most formidable member of a rugged family, which included the Thunderjet and Thunderbolt . . . with increased fire power and greater mobility for strategic fighter or fighter-bomber operation, is produced for the U.S. Air Force and our Allies in the North Atlantic Treaty Organization.*

REPUBLIC AVIATION

FARMINGDALE, LONG ISLAND, N. Y.

Makers of the Mighty Thunderbolt · Thunderjet · Thunderstreak · XF-91

FLYING
VOLUME 52, NO. 4
APRIL, 1953

AN EDITORIAL

Chocks Away

TO WHAT may civil aviation look forward under the new national administration?

Or, perhaps the fairer question would be . . . to what *should* civil aviation look forward?

Certainly much depends upon the conscience which civil aviation itself brings to the subject.

The roots of the problem lie in the renaissance of the original American concept of the character and function of government.

If the wings of national philosophy are again brought straight and level, neither turning sharp right nor continuously veering left, we may look to the founding law of civil aviation administration for our cue.

This would mean emphasis on promotion over regulation, freedom of opportunity as opposed to restriction, reward for effort as against penalty for initiative.

It would mean the end of political favoritism, a fairer profit incentive for industry, a greater federal interest at the grass roots, an aggressive prototype development policy for transports in scheduled commerce.

It would mean rigid qualifications to appointive offices in federal aviation administration, protection of civil aviation facilities against pre-emptory military encroachment, and demand for self-discipline on all civil aviation to replace a multitude of regulations.

Civil aviation in the United States has every natural ingredient necessary to a continuously dynamic future . . . industrial capacity, a vast potential for the expansion of air commerce, an expanding utility for the personal airplane in business and agriculture, a high living standard to embrace the pleasure craft.

Nor can it be denied that these ingredients have been productive. They have been, but not to the extent which they merit. It is the unleashing of fresh emphasis on their possibilities that is needed. In the sphere of promotion, government can give full play to its energies without prostrating its own character.

Federal aviation officials following one another over several decades have initially labored in most instances to be more than legalists and politicians. Some have been replaced, some have surrendered to bureaucracy, and others have quit in hopeless frustration.

None could possibly have succeeded greatly because all had to toil within a framework of paternalistic government and o'erweening partisan consideration.

This originated when, several decades ago, the ship of state was flying an erratic course and a fresh crew was called to the cockpit. Hard left rudder was immediately applied.

The nose swung through the margin of course error and continued to turn. Before pressure was relieved the ship was cruising on a reciprocal course, back toward skies which its designers had fled . . . skies where government was an end in itself rather than the means to an end.

To win and hold converts such government must be originally paternalistic. And so it was. Such government must also be big and all-absorbing and all-regulating and minutely political to sustain its swollen self. And so it was.

In such an atmosphere civil aviation, an eager stripling, was reared . . . given too much spending money at times and brushed off and whacked too much with rules at other times. And thus it stands today . . . eager, quizzical, a bit spoiled, a lot curbed, and waiting for a cue.

There are those who will expect the new national administration to build tail winds into airways and line thunderheads with silver. There are those who already are cynically arranging new contacts and laying pipe lines of influence in expectation of political favors. And there are still others who make a virtue of criticising government of any kind to enhance their nuisance value.

But none of these nor all of them together represent the hard core of civil aviation in all of its component parts. That hard core inclusive of all levels from private pilot to airline and industrial executive would rather have opportunity than subsidy, equal treatment than political favoritism.

Let government create the atmosphere of growth and opportunity. Let it foster initiative and inspire confidence. Let it spread responsibility and demand self-discipline.

Then if civil aviation has inherent character it will flourish. If it has not it does not belong in the field of free enterprise. Take the chocks away and let's find out. To this we should look forward.

Gill Robb Wilson

Gill Robb Wilson
Editor and Publisher

TYPICAL FLAGSHIP SAVINGS*

	DAYTON-BOSTON	PHILADELPHIA-CHICAGO	ST. LOUIS-NEW YORK
YOU SAVE	$4.96	$7.87	$2.07
YOU SAVE	11 hrs.	10½ hrs.	21 hrs.

*Comparison with Standard Fare Train (including lower berth)

Prices may be rising, but not OURS!

Searching for ways to hold down expenses? Check the box above—and note how much air travel saves you in fares alone compared to first-class surface transportation. What's more, delicious Flagship meals are always "on the house." Add time-saving advantages—and you have the best reasons in the world for flying American.

America's Leading Airline **AMERICAN AIRLINES** INC.

CARIBOU—members of a huge Arctic deer in Newfoundland's northern peninsula

Author Lee Wulff rates this 25-pound beauty as typical of the salmon waiting to test the skill of fishermen flying to Portland Creek.

Wilderness Bound

Beyond the last highway and rutted trail, adventure awaits the airborne sportsman.

By LEE WULFF

A LIGHTPLANE pilot is accustomed to seeing roads. Like twisting ribbons they stretch out beneath him in a network. They tunnel through mountains, bridge great rivers, and link themselves together by means of car ferries where the waters are wide. They cross, they merge, they change from dirt to hard surface and back to dirt again but always they go on. Always, that is, until the wilderness or the sea stops them.

When the highways are finally halted, the pilot who wants to see what lies beyond the range of the ubiquitous automobile may fly on to find fishing where there are more fish than fishermen, hunting where there's no need to dress in scarlet, and people who are resolute and friendly but who have never seen a car, a train or a movie. He can fly over country where the only other methods of movement are by boat or on foot. A landplane can travel a little beyond the range of roads but a seaplane can take its pilot to almost any nook or cranny of the northeast country (*Continued on page* 43)

THE TENNESSEE

Down in Knoxville, you get University credit for learning to fly.

By RICHARD A. STAPLES

Flight Coordinator
University of Tennessee Flying Program

THE tall, slightly greying passenger unfolded himself from the two-seater and looked around. Having just been treated to his first airplane ride, "on the house," he seemed to be seeing the airport for the first time.

We had taxied over to the hangar and I followed my visitor out of the plane. He still wore a pleased young-boy look as he watched his son run to him across the apron. Talking all the time, he was telling me that he was quite sure now. He wanted his son to take this training; wanted him to acquire an air consciousness and understanding never available to the father.

This much I had expected. But then he went on. "You know, though," he said, "if this were not a University-sponsored program and my son wanted to fly at just any flying field, I dare say I'd not let him do it."

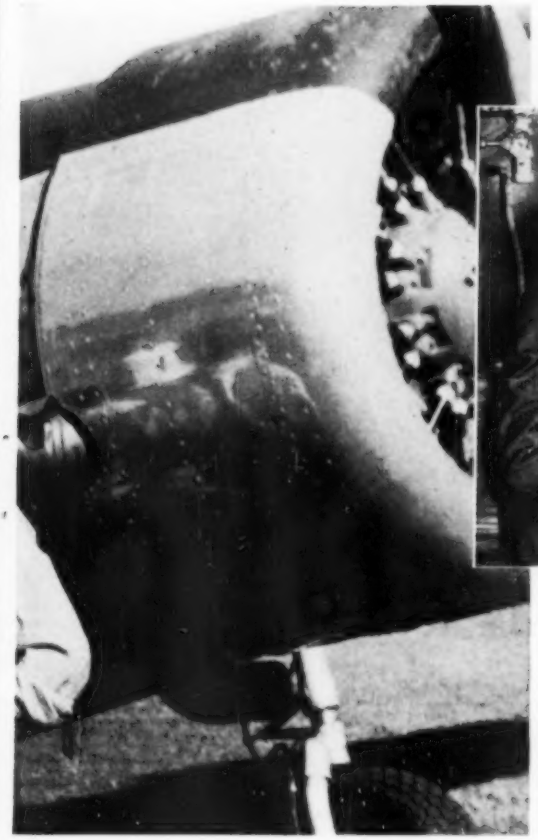
In those words this father hit on a prime selling point of the simple aviation idea which we call the Tennessee Plan. Simple though it is, the plan is working. And, since we're down here next door to Oak Ridge where they split the atom, we like to think that this proven means of fusing higher education with the air age offers the possibility of producing an aviation "chain reaction."

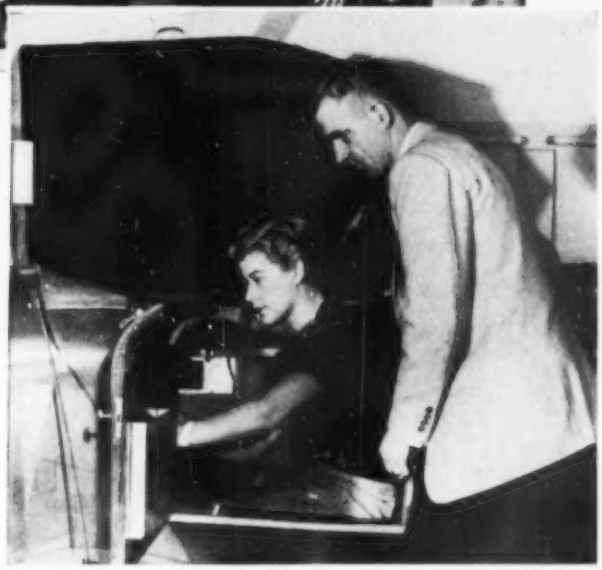
All of us know that grass-roots interest in aviation is at a dangerous low. Already this condition has adversely affected the national strength . . . personnel shortages in aviation industry and commerce, decrease in numbers of community airports, shortages of highly qualified youth for the air defense.

What can be done about it? Most of us who have stayed in the flight training field have looked, I think, for a miracle. We keep telling ourselves that public attitudes will change and reawaken grass-roots interest. Or, we say, surely the federal government will sponsor aviation training in the nation's schools.

The Tennessee Plan is not spectacular but it is more practical than waiting for a miracle. It is based on the simple idea that we take what we have—and promote it!

Basic ingredients of the plan are a fixed base or local





At left, Murfreesboro students are briefed for a training flight to Florida by H. Miller Lanier (left foreground); *below*, Herbert P. Neff, director of groundschool at the U. of Tennessee, argues fine points of navigation with "Corky" Collier, Paul Algee and Charlotte Jones; *at bottom*, Richard Staples gives Link instruction to Missy Bradley, first U. of Tennessee co-ed to solo.

PLAN

flight service operator, and a body of students brought together by a college or university. The educational institution enters into a written contract with the flight operator. He offers flight and groundschool training to students of the institution; the college or university grants regular credit for the work. The plan is unusual in that the school expends no funds on the program and owns none of the facilities, nor is the flight operator in any way subsidized.

In Knoxville, at the University of Tennessee's main campus, the program has passed the test stage and is now proving itself. In fact, we are getting the beginnings of our "reaction." Although just entering its second year, the plan has prompted inquiries from educators and flight operators in some 20 states. The desire to awaken aviation interest in this country is widespread.

We have John E. Sims—Assistant to the Regional Administrator of C.A.A. Region Two, with headquarters in Atlanta—to thank for the idea behind this plan, and much of the follow-through. Sims persisted for more than two years in convincing the University of Tennessee that this type of aviation training can "belong" in an institution of higher education.

Part of the University's delay in adopting the program was due to the standard procedures which are normally required for approval of a new program. There must be studies, investigations, and a series of committee approvals. This works to the advantage of the program, however, because once the institution has said this is "our" program, the public knows it can place its confidence in the new offering.

The other part of the delay can be attributed largely, I think, to the fear that flight training has value only in that it teaches a student to "drive" an airplane. We had to do a job of educating, pointing out that this is not a mere vocational offering but contributes to the student's understanding and ability to cope with the world in which he will pursue his career.

Dr. C. E. Brehm, University of Tennessee President, recently told Charles A. Parker, Executive Director of the National Aviation Trades Association, that "we want to encourage in every way that we can training of this kind. . . . We expect to continue our interest in this type of training."

Promotion Is Key

The simple ingredients for the plan have already been named, but there has been only (*Continued on page* 50)

U. S. Coast Guard icebreaker, *Eastwind*, showing the flight deck 60 feet in diameter from which balloons are launched, is dwarfed by an iceberg.

ROCKETS in the ARCTIC

Rockets fired from balloon platforms open new era in upper air research.

By J. GORDON VAETH
U. S. Navy Special Devices Center
Office of Naval Research

BAFFIN BAY—the stretch of water which separates Greenland from Canada—is an unfriendly area even in summer. It is characterized by high winds, ice and icebergs. Despite these unfavorable conditions, it was recently the scene of one of the most significant rocket experiments in years. Here, rockets were fired in mid-air using balloons as launching platforms.

Purpose behind these rocket firings, the world's first from high altitude balloons, was cosmic ray research. The earth is heavily bombarded by a never-ending stream of sub-atomic cosmic ray particles. These particles, originating no one knows where, are influenced by the earth's magnetic field. At the geomagnetic pole, this influence is at a minimum. Measurement of cosmic rays at the top of the atmosphere over the geomagnetic pole represents the closest earth-bound approach to the condition of cosmic radiation as it exists in the solar system.

For this reason, a scientific expedition was organized by the Office of Naval Research to carry out a series of high altitude cosmic ray investigations in the vicinity of the geomagnetic north pole during the summer of 1952. A group of nine naval and civilian technicians and scientists left the United States on July 25 and flew to Thule, Greenland, where they met the U.S. Coast Guard Icebreaker *Eastwind* and other ships of an Arctic resupply mission which had brought their scientific equipment from the States.

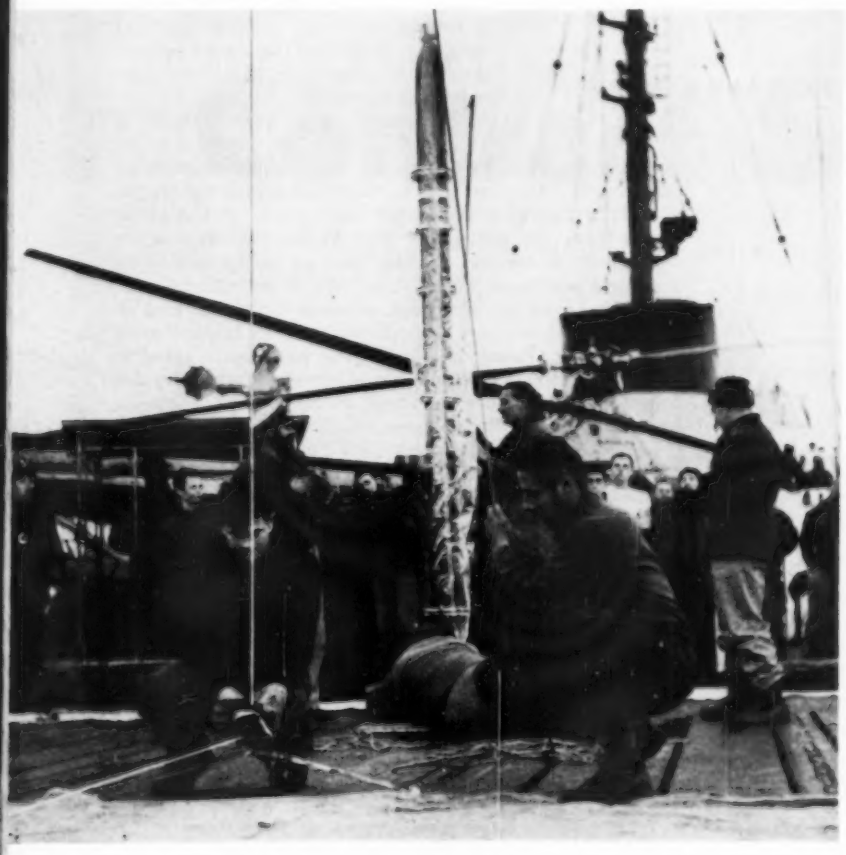
Included in the equipment were: plastic SKYHOOK research balloons made of polyethylene film only one-thousandth of an inch thick; DEACON meteorological sounding rockets measuring about eight inches in diameter and 10 feet in length; and instrumentation to measure the charge and energy of the incoming cosmic radiation and its interaction with the earth's atmosphere.

Aboard the *Eastwind*, the scientists reached the most northerly latitude ever attained by a ship under its own power—within 442 nautical miles of the North Pole. On the way back from Alert, North West Territories, on Ellesmere Island, they began their high altitude flights. With Lt. Malcolm S. Jones, Jr., USN, of the Office of Naval Research Physical Sciences Division as Project Director, they launched SKYHOOK balloons for cosmic ray studies up to 90,000 feet and SKYHOOKs carrying DEACON rockets for studies at still greater altitudes. They believed that, by launching DEACONs from airborne SKYHOOKs, they could successfully attain much greater heights than by either SKYHOOKs or DEACONs alone. They were right. Launched from the polyethylene cells, the DEACONs climbed to altitudes of about 40 miles.

DEACON rocket begins its ride to the stratosphere on a SKYHOOK balloon.

Cosmic radiation of these heights, the greatest ever attained in that part of the world, was measured by geiger counters or ionization chambers carried by the DEACONs. A special nose cone for cosmic ray research had to be developed for the DEACON by Dr. James A. Van Allen of the State University of Iowa who directed the rocket experiments. Data obtained by the counters or ionization chambers were telemetered or radioed back to the *Eastwind* for recording and subsequent analysis. Use of this radio technique of data transmission made it unnecessary to recover the expended rockets after flight.

First step in firing a DEACON to its record height was to lay out and inflate the SKYHOOK balloon. This was no easy task to accomplish on the 60-foot diameter flight deck of the *Eastwind;* it provided (*Continued on page* 53)



A DEACON, protected against the cold by a plastic cover, is readied for launching.

NIGHT CHECK-OUT

Nervous about night flying? All you need is practice.

By FRANK L. HARVEY

IF YOU expect to do serious cross-country, you should get checked out in night flying. You may find yourself a few minutes short of your destination with the light failing, and face two disagreeable alternatives: (1) keep flying and take a chance on landing in the dark with no previous night landing experience; (2) land at some inconvenient spot where taxis, food and lodging are either hard to find or expensive.

On three occasions during a recent extended cross-country, I was confronted with these alternatives. I always landed and played it safe. Each time the inconvenience was great, considering that I could have reached my destination by flying only a few minutes in total darkness. I had to hitchhike four miles at St. Augustine, Fla.; buy tiedown ropes and dig up wheel-chocks at Suffolk, Va.; and finally had to stop at Asbury Park, N. J., and spend the night within a mere 50 miles of my home airport.

The heck with that, I decided. It was high time for me to get checked out in night flight.

The other evening I went to Morristown (N. J.) airport for a night check-out. The things I learned might help you if, like me, you have been putting off night flying through inertia or laziness.

Old pilots will tell you that it isn't necessary to have a formal check-out. All you do, they say, is start in the gloaming and keep making landings until it is pitch dark. Many pilots have done it this way, but I prefer the conservative approach.

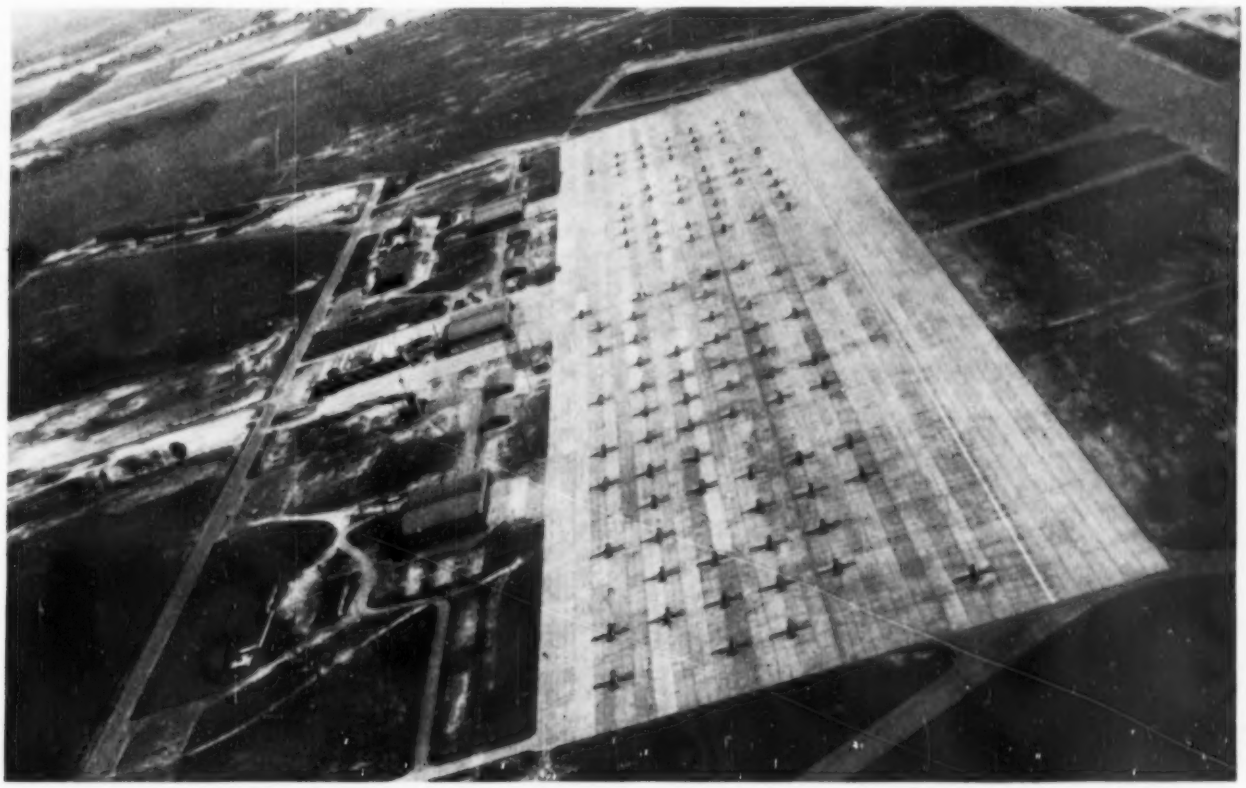
The first thing to keep in mind is to be more alert, more certain of every motion you make. In going over your checklist, don't let excitement make you hurry. Run the engine up on the ground at full rpm and check both mags. If the air is moist, leave the carburetor heat in the full-on position for at least 30 seconds to make sure no ice formed while you were taxiing or sitting at the end of the runway.

Now take a long, slow look around—both aloft and on the airport. Spot every plane in the area; fix in your mind what they are doing; and keep their positions in mind at all times. After a transient plane leaves the area you can forget it—but if there are three or four planes practicing night landings in the pattern, watch out for them.

Check runway clearance. This can be confusing. At Morristown, for example, there is a red warning light on a tower directly off the end of the west runway. Together with the usual green lights which mark the extreme end of the runway, this red light looks like the wing-tip light of a plane. Sometimes you will find that a plane is taxiing back toward take-off position on the runway itself. When you are keyed up it is easy to make a snap judgment—the wrong one—and end in a jumble of wingtips. You have plenty of time. If you aren't *sure*, and feel there may be some doubt as to whether or not you ought to take off at once, pull off the runway and check again. Don't just sit there doubtfully, however, because a guy may be coming down on his final approach behind you!

"Line yourself up . . . be sure you're centered between the rows of boundary lights."

After you've flown a few times at night, these lights will not bewilder you nearly so much and your take-offs will be as quick, positive and (*Continued on page* 64)



One hundred and twenty-seven T-6's dot the apron of the Southern Airways School, contract school operated at the Bainbridge (Ga.) AFB.

Contract Schools

Nine civilian schools provide primary training for U.S. Air Force and NATO cadets

By GORDON C. SLEEPER

Who teaches our new aviation cadets to fly? Who teaches young officers out of West Point or college graduates who come out of R.O.T.C. with Air Force commissions? Who trains the hundreds of foreign cadets from Atlantic Treaty nations? The answer is not Top Secret but few know it, for the answer is civilians in civilian contract schools.

There was precedent for this in World War II when some 64 civilian operated schools gave Army Air Force cadets their first 65 hours of primary flight training, mostly in PT-17's. The record of these schools was a bright chapter in the program that trained over 246,000 of the world's finest pilots.

All these schools closed when the war ended, as did most of the great Air Force bases where cadets had received their basic and advanced training from military personnel.

Then, after five years of demobilization and suspended training programs, came Korea and the realization of great danger in other parts of the world.

Sudden demands on the now independent Air Force brought thousands of reserve pilots back to active duty. Air Guard squadrons of many States were mobilized. The trained pilots of World War II took over, repeating their magnificent records of service.

To create new reservoirs of pilots to fly new types of planes soon to roll off production lines, the Air Force in the summer of 1950 adopted a new Aviation Cadet Training program. It applied also to the training of students already commissioned as officers and to the training of hundreds of youths sent us from other countries now recognized as our Allies.

Again the Air Force called on civilians, and this time entrusted them with far greater responsibilities. Said Lt. Gen. Robert W. Harper, Commanding General, Air Training Command, to trusted World War II operators

and other responsible organizations: "Pick any one of our abandoned or inactive Air Force bases that you think you could put in shape and make a bid for giving 130 hours of flight training in T-6's that we will supply; house and feed the cadets that we will send you and give them a complete curriculum of ground school instruction. In short, take over and give everything at one base and on one type of plane that used to require three bases and three types of planes; teach in 130 hours in the air what used to take 235 hours.

Had every eye not been riveted on Korea, the startling nature of General Harper's request might have made headlines in the press of the nation, for here was a demonstration of military faith in civilian assistance almost without parallel.

General Harper was asking, in essence, "What locations do you recommend, what construction and rehabilitation will be necessary, how long will it take, how much will it cost? How soon can you get together all the personnel for operation—office and shop people, cooks, chauffeurs, mechanics? Can you recruit pilots who can put a beginner in a North American T-6, 650 hp advanced trainer and teach him to fly solo, cross-country, aerobatics and basic instrument flying? Can you find instructors in aerodynamics, aircraft engineering, Link, safety, weather and radio communications?"

The answer was electrifying! Into Waco, Texas, Headquarters of Gen. Gabriel P. Disoway, responsible under General Harper for Flying Training, poured the responses of civilian bidders.

Out of temporary confusion came order and quick decisions. Nine operators received contracts—two in Georgia, two in Mississippi and one each in Florida, North Carolina, Missouri, Texas and Arizona.

Deserted and almost forgotten bases sprang into life. Nearby towns and villages rubbed their eyes in wonder. In incredibly short time, decaying structures were restored, missing buildings replaced and new facilities supplied.

Key personnel of World War II civilian schools were summoned from all over the world and assigned to recruit the 600-700 civilian personnel needed for each of the nine schools. By spring of 1951, pilots already screened and tested were being sent for refresher and standardization training to the Air Force Instructors School at Craig Field, Selma, Ala.

The first of the contract schools to receive Air Force cadets was Graham Aviation, then located at Greenville, Miss., now in process of transfer to Marianna Air Base in Florida, and Cal-Eastern Airways, Inc., Columbus, Miss. Close behind came Hawthorne School of Aeronautics, Moultrie, Ga.; Garner Aviation Service Corporation, Bartow, Fla.; Texas Aviation Industries, Hondo, Tex.; Anderson Air Activities, Malden, Mo.; Southern Airways School, Bainbridge, Ga.; Servair Aviation Corporation, Kinston, N. C., and Darr Aero Tech., Marana, Ariz.

To each of these schools comes every six weeks a new class of 130 cadets or student officers. Of each new class, a large percentage are foreign students picked by their respective Governments for training as future pilots of new squadrons being formed by Atlantic Treaty nations under mutual aid agreements.

In beautiful teamwork, military authorities at each school work with the civilian operators, accepting responsibility for recreation, disci- (*Continued on page* 61)

Tradition is upheld (*left*) as a student officer at one of the civilian contract schools is given the old heave-ho following his first solo. *Below*, youthful cadets are briefed by a civilian instructor at Bainbridge.

▲ Planes are aligned in neat array around the curving apron at Malden Air Base, Malden, Missouri, one of the nine contract schools.

◀ In formation over the Georgia countryside—AT-6's, in which cadets receive 135 hrs. of training.

A crash and rescue demonstration ▶ —an important phase of the cadet's training at Spence Air Base.

Students from U. S. and NATO countries receive communications training at the Hawthorne School of Aeronautics, Moultrie, Georgia. ▼

▲ Aviation cadets check the weather before take-off at Spence AFB.

▲ Camera and clamp—the *modus operandi*

▶ "gently, now, to the right"

◀ "straight and level"

▲ "watch the airspeed"

BETTY SEGHERS had never been aloft in anything smaller than an airliner when her husband, Photographer-pilot Carroll Seghers, II, persuaded her that it wouldn't take her more than a day to learn to fly. Betty was game to try, so with Carroll in the front cockpit she took off early one morning from Broward Airport, Fort Lauderdale, Fla. A camera clamped to a brace inside the plane recorded Betty's expressions, with Carroll operating the shutter by a battery and cord extension. Betty had her heart set on soloing before sunset on her first day in a lightplane but gusty winds and showers forced a postponement. She *did* solo the second day, with

A pretty girl and a camera are teamed to record the never-to-be-forgotten thrill of that

FIRST SOLO!

"watch out for other planes"

"what did he mean, lift that wing?"

2 p.m.

Carroll stationed alongside the runway to record that critical moment, the first touch-down.

Soloing in a single day is by no means unheard of, but it's seldom that the aspiring pilot is so photogenic or that the instructor is sufficiently ingenious to teach and take pictures simultaneously.

Except as a stunt, there's not much to be said in favor of learning to fly in such a rush. The tension of such an undertaking is sure to result in nervousness and undue fatigue. However, after one day or after three months, there's a thrill of excitement connected with that first solo that is one of flying's unique rewards.

4 p.m.

"oops, that wing is low"

"BUT, I DID IT!"

The TUTTLE REPORT

A BUSINESSMAN REPORTS TO HIS COMPANY ON HIS USE OF LIGHTPLANE TRANSPORTATION

By DOUGLAS E. TUTTLE

Douglas E. Tuttle

Douglas E. Tuttle is Manager of the Anilox Department, Eastern District, Printing Ink Division of the Interchemical Corporation. Widely known as an authority on Flexographic printing, Mr. Tuttle has lectured extensively on this subject before graphic arts groups. Most of his business activities since 1933 have been in direct connection with Flexographic printing and the inks used with this process. He joined the Printing Ink Division of Interchemical Corporation in 1938.

To: The Vice President-in-charge, Eastern District, Printing Ink Division, Interchemical Corp.

ABOUT five years ago, F. Henry Wittel, then an Interchemical Corporation service man covering Richmond and Atlanta territories, asked whether Interchemical had ever considered use of an airplane instead of a car for personal business transportation.

Wittel found that at least 60 per cent of his time was spent in travel. He had given the question considerable thought and, being eligible for flight instruction under the G.I. bill, had begun to take flying lessons.

No one had ever asked me that question before. I had flown but little in lightplanes, was not particularly interested in them, and felt they had scant practical value as a useful, dependable means of transportation. I laughed off Wittel's question.

Wittel applied himself so conscientiously to his job with the company that he was able to be home only a few days of the month. This eventually forced him to accept a job where he could be a more normal husband and father.

A year or so later, Charles Jackson, Wittel's successor as service man, asked whether the company had given any thought to a man in his position using an airplane for personal business transportation in view of loss of time in transit. About the same time Lew Powers, then in training for service work, asked the same question. Powers had been a Marine fighter pilot but Jackson had never flown.

I told Jackson and Powers the company had given no thought to the idea, but promised to do some checking on it.

Art Marsh, of Interchemical Finishes Division, had a plane and used it some for business transportation, but this could be forgiven as he sold certain finishes to the aircraft industry.

Art Legge, of the Dallas office, sometimes rented a lightplane for business trips. This was tolerated uneasily, probably on the grounds that Texas was an exception due to weather, distances, and the strange breed of people who live there. Everyone just hoped he would not get hurt.

The fact remained, therefore, that no one in management apparently knew, or cared, whether a new mode of advantageous transportation had grown up around us

EDITOR'S FOREWORD

Increasingly the pressure of sales and service competition is creating a market for the small airplane in business. Increasingly the salesman and service man who gets around the greatest area fastest is outstripping the competition.

In this evolutionary process, those who pioneer and make their experience available to others can render great service.

Surveying this evolution, we found a field manager who had first greeted the idea of the small business airplane with skepticism but intelligently kept an open mind, possessed the initiative to explore eventually its use, and finally reaped the rewards of its utility for himself and his company.

Starting from scratch as a student pilot in 1950, businessman Douglas E. Tuttle learned to fly, purchased and equipped a plane, and used it as routine business transportation. He kept records of his investment and costs, advantages and disadvantages, and at the end of each of the two past years made comprehensive reports on the use of the small plane to his company.

Believing these reports would be of service to others, we requested from Mr. Tuttle and his corporation the privilege of reprinting them in condensed form. The first of the two is found in this article. The second will be printed in the May issue of FLYING. *These are reports—not stories.*

Report No. 1 covers Mr. Tuttle's introduction to business flying in January, 1950, and the actual routine use of his plane from Sept., 1950 to Sept., 1951. Report No. 2 covers the period from Sept., 1951 to Sept., 1952.

The Editor

without our realizing it. This bothered me. I felt that Jackson and Power, and Wittel before them, were entitled to some answer besides "we don't know." If I could have found that our company had investigated the whole idea, and had assembled facts and figures which proved definitely and conclusively that an airplane was prohibitively dangerous, prohibitively expensive, impractical due to design, construction, or weather factors, etc., the whole thing could have been settled then and there.

But since we *did not know* the airplane was not a good thing to use in our business, the disquieting possibility that it *might* be remained.

I was finding it virtually impossible personally to keep in close touch with Interchemical branches and customers in the Eastern Division by any other means of transportation. Perhaps an airplane might provide the answer.

I began asking others for their thoughts, experiences, etc. March said that use of his plane was much easier on him than a car. He did not know how much it cost to operate the plane, on any unit basis, but was sure it was not much more than a car. He had flown it 2,000 hours, equal to about 300,000 road miles. He said he liked to fly at night better than by day!

Art Legg said he rented a plane when he wanted to take a trip, and that it cost about the same as a car. He said weather did not bother him much in Texas, but might be more of a factor elsewhere.

Wade A. Morehouse, president of Cohoes Envelope Co., had a four-place plane. He had flown it to Banff on vacation, with a side trip to Alaska. He had not found weather to be much of a factor in his local Albany, N. Y., area. He had no figures on the unit cost of his plane, but said it depended a lot on how much it was used. He was sure it cost no more to operate than a car and was definitely safer.

Willard Coveio, printing superintendent at Groveton Papers, whose flying experience dated from barnstorming days, offered enthusiastic encouragement, but could give no actual figures as to cost, utilization, etc.

IN THE spring of 1949, Wade Morehouse provided a graphic illustration of what an airplane could do for an average individual. He was one of a party of 10 who arranged to spend a week-end fishing at Lake Sebago, Me. Most of us left New York by car at noon, Friday, drove hard all afternoon and much of the night, arriving at Sebago at 2 a.m., Saturday. Wade flew in at 10 a.m., fresh, rested, and fit. We left for home at 3 p.m., Sunday—Wade by plane, the rest of us by car. Wade was in Albany in two hours. The rest of us pushed hard and arrived home red-eyed, short-tempered, and exhausted at about 3 a.m.

That did it! I decided it was past time our company found what personal plane transportation was all about. Considerable reading on the subject made me suspect we were being, in our time, just as backward as our grandfathers who refused to forsake old Dobbin for the automobile, until long after it had "come of age."

THIS report covers my first year's operation of a personal airplane for business use, in an effort to provide many of the answers to questions we have previously had to avoid, ignore or discourage for lack of factual experience.

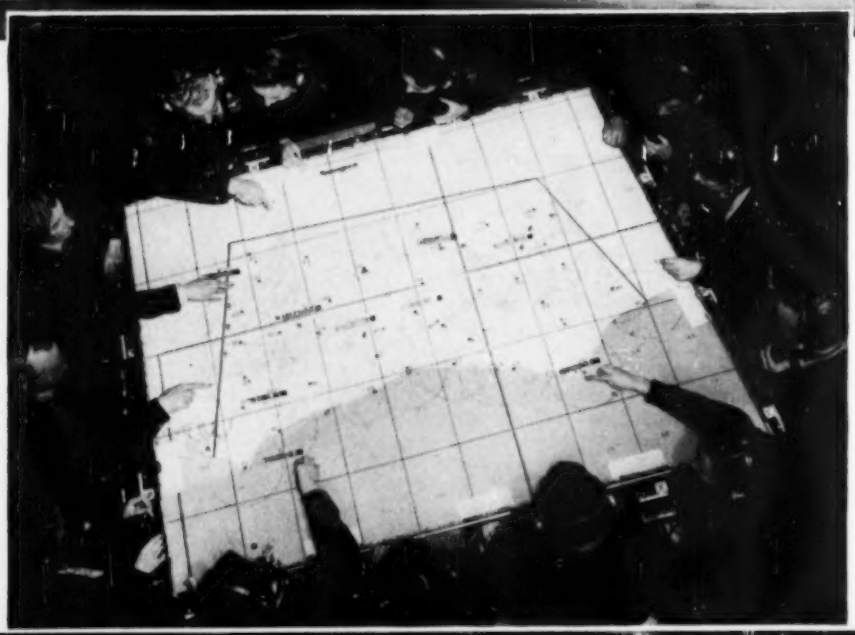
The first step was instruction. I had to learn to fly. In January, 1950, I enrolled in a "controlled course" of instruction at the Morristown, N. J., airport. A "controlled course" means the student remains under the constant direction and "control" of the CAA-approved flying school which is providing his instruction. Even after the student solos, he practices where and what the school tells him and does not go off on his own to practice according to whims and fancy.

I took one lesson of an hour's duration per week. My first was on January 21, and involved familiarization, straight and level flight, and turns in both directions. Subsequent lessons covered various turns, stalls, spins, take-offs and landings. The most difficult item in learning to fly is landing. This is about on a par with learning to back a car into a parking space at the curb.

On April 8, 1950, I soloed, and on June 12 made a dual cross-country flight to Allentown, Pa., in company with an instructor. On June 22, I made a solo flight to Springfield, Mass., combining business with my flying course, by spending the day at P. P. Kellogg, Division of U. S. Envelope Co., and returning in the evening by way of Danbury, Conn.

On July 6, 1950, I received my private license, after a total of 40 hours' flying time.

On September 1, 1950, I bought a used, four-place plane in very good condition. This plane cost, with navigation lights, $1875. My aim was to make my plane as safe as possible. I added steadily to its equipment to achieve this end—a stall warner, landing and taxiing lights, cockpit light, navigation light flasher, two complete two-way radios (a low (*Continued on page* 54)



Observers indicate the position of an aircraft on the post's plotting chart. Uniforms, issued to the Corps in 1942, are worn by part-time observers only when on duty; by full-time observers at all times.

At left, the main plotting table in the Operations Room of a Royal Observer Corps group. Plotters are recording information on aircraft movements reported by posts. Colored arrows show direction of flight and plaques indicate the height of the aircraft and the strength of the "raid."

Blue-uniformed members of the R.O.C. march to Westminster Abbey, London, to attend a Service of Commemoration of the Battle of Britain, fought over southern England in 1940. This was Corps' first major test.

ROYAL OBSERVER CORPS

Britain's civilian force has stood the test of two wars.

By CHARLES SARGEANT

Editor of Britain's "Joint Services Recognition Journal" and "Royal Observer Corps Gazette"

BRITAIN'S Royal Observer Corps, some 30,000 strong at the peak of World War II, is again in active training for emergency.

The R.O.C. originated in 1914 when policemen on duty within 60 miles of London were ordered to report any aircraft seen or heard to the Admiralty in Whitehall, London. The Admiralty was responsible for such defense machinery as then existed. That arrangement did not work well, and in 1916 a system of watching posts manned partly by soldiers and partly by police was established around London and other vulnerable areas.

A year later command of the defenses was given to the War Office which reorganized the observing and reporting part of the system. Watching posts, gun and searchlight stations, airfields and other defense units were linked by telephone to control points where reported aircraft movements were plotted on large-scale maps. These plots were fed to a central control at the Horse Guards, in Whitehall, whence defenses were ordered into action and air raid warnings issued.

Before the full effect of the new system was felt, World War I ended. The system withered and all but died. In 1919, however, Winston Churchill, then Secretary of State for Air and War, stated his strong conviction that it was essential "to keep alive the intricate and specialized art of air defense."

Britain's War Office and Air Ministry accordingly decided in 1921 to prepare a system, for introduction in wartime, of collecting and distributing information on the movements of all aircraft, both hostile and friendly. Original coverage was south of a line drawn from Portland Hill on the south coast to The Wash on the east coast. That area, lying nearest to danger in the event of war in Europe, later became the scene of the greatest tests and triumphs of the Observer Corps.

In the reign of Queen Elizabeth I of England a system of beacon fires, linking the coast with London, gave warning that the invading Spanish Armada had been sighted in the English Channel; so the crest of Britain's Royal Observer Corps bears an impression of the Elizabethan beacon-lighter—the observer of that time—over its motto: "Forewarned is Forearmed." This figure symbolizes the constant vigilance necessary to defend a way of life. It links, incidentally, the two Elizabethan periods.

Experiments began in the county of Kent in 1924. A number of observer posts were established and manned by special constables—voluntary, sworn policemen who were part-time and unpaid. The posts were linked by telephone to controlling centers which were later called operations rooms. The scheme was extended in 1925 to the whole of Kent and Sussex and part of Surrey. A year later, observer cover was extended to Hampshire and Suffolk and, in 1931, into Hertfordshire and Buckinghamshire.

As the political skies in Europe darkened, so the Observer Corps was strengthened and developed. At the outbreak of World War II, almost the whole of England, Scotland and Wales was covered by a system of observer posts. Cover was complete by 1941.

Britain was (*Continued on page* 52)

Learning the hard way

Light can dawn in some odd places—
sometimes in the bottom of a gulch.

By JOSE VALBUENA

SINCE childhood my ambition to become a pilot had been all-consuming but got nowhere. In the first place I had no money of my own, and in the second place everyone said I was too young.

Eventually I graduated from preparatory school and that autumn went to college. "Ha," I said to myself, "now they can't throw that 'too young' stuff at me, and I've got my own allowance. Here's where I fly."

Nor was opportunity lacking. A Collegiate Flying Club was offering student courses including ground school. Me for that! I bought myself a whole outfit of what I supposed pilots wore—goggles, scarf, flying boots, leather jacket . . . the works.

I was ready to conquer the wild blue yonder! At this point nobody had yet told me that it was a wise young man who conquered himself before he tackled something quite so big as the sky.

On my first day out I was taken for an indoctrination ride by my instructor, Robert Young, a former B-17 pilot. He explained the importance of ground school courses and of listening to experienced airmen at every opportunity. As we went along I listened to him with one ear, but the other was twitching with excitement. Boy, oh, boy, was I going to buzz that girl's house when I learned to twirl this jalopy!

Next day I took my first real lesson. Attired in all my flying finery I mounted my jet (a J-3 *Cub*) and was bored by another lecture from Mr. Young. My off ear was still twitching.

A full 12 hours of dual instruction dragged by and I couldn't understand why Mr. Young failed to see what a hot pilot I had become. Finally, after much coaxing and many promises of good behavior aloft, he agreed to let me solo. That landing was the best I ever made.

However, a week and three solo hours later, I made the landing that was really to teach me what I badly needed to learn.

The day was like any other except for a solid overcast and a brisk 20-mile wind. After lunch I skipped classes and headed for the airport. With everything checked, I took off and climbed uneventfully through the rough air to 2,000 feet, under the base of a big black cloud. A few minutes of practicing stalls and I was having fun. This was the life!

It occurred to me that the boys at the dormitory might like to admire my flying—my girl wasn't near enough to be entertained on this occasion—so I did some lazy eights and such capers for my roommates.

Suddenly I realized that the ceiling was coming down fast and the air had gotten rougher than I had ever felt it before. I headed for the airport pronto, while the sky got blacker and blacker.

Our average-sized airport was bordered with trees on three sides and by a steep ravine on the fourth side. As I approached into the wind I had to clear the trees and some wires but tried not to let it worry me. Big newspapers were blowing across the field and the instruments were jumping around like mad. The J-3 was taking a beating from the bumps. And so was I.

First I threw away my fancy gloves. They seemed hot and my hands were sweating. Then my leather jacket began to feel cumbersome and my scarf blew up into my face. Suddenly I didn't see the field any more but only a big row of trees. I pushed hard (*Continued on page* 61)

Private Flyer in Sweden

Gunnar Haglund is pictured beside the Ercoupe of the Stockholm Sport Flying Club. Haglund is chief pilot for a fleet of planes flying deliveries of a Swedish newspaper.

Lake-studded Sweden is a northern paradise for planes on floats and skis.

By BENNETT L. JACKSON

NEVER ask a Swede how far it is to the next airport. If he tells you it's 20 miles, chances are he means it is 125 English miles. That Swedish mile is a whopper—right out of the Paul Bunyan tales. Actually, it is 10 kilometers and, while its use makes distances sound short when you are only talking about them, it takes real time to cover many of them even in an airplane.

I learned about the Swedish mile from Gunnar Haglund. He is chief pilot for Stockholm's *Tidningen* and flies the Grumman *Widgeon* that is the staff plane of that big daily newspaper. He found me at the hangar entrance on Bromma Airport. I had a brand new Swedish validation on my private pilot's license and an I-want-to-fly gleam in my eye. I was looking for the diggings of the Stockholm Sport Flying Club. The only trouble was that the security guard couldn't understand me and I certainly couldn't understand him. I was just getting ready to start making wings with my hands when Gunnar came along and saved the situation. He spoke perfect English, knew all there was to know about flying in Sweden, and was willing to share his knowledge with this American who had never strayed so far north before.

The preliminary arrangements for flying in Sweden are easy enough to make. The Royal Board of Civil Aviation is located at 3 Ralambsvagen in Stockholm. There you can get a validation on your current pilot's license in a few minutes. There is no waiting and no charge. The flying club is, as already indicated, located on Bromma Airport, a short bus ride out of town. Incidentally, it is a number 60 bus and leaves from Norra Bantorget.

Bromma is the international airport of this northern capital so it is both big and busy. There is a good restaurant on the field and, on top of it, a spacious observation platform. Although it was winter and cold, I climbed up there to watch. Wheeled traffic was using the cleared runways, while planes on skis were operating elsewhere on the field. Several DC-3's bore the markings of Aero O/Y, the Finnish airline, which keeps a frequent schedule to Helsinki. The ski planes belonged to either the flying club or one of the numerous Stockholm newspapers, all of which use planes to provide delivery service to towns throughout the country. The *Tidningen*, for example, has its own fleet of planes for this purpose.

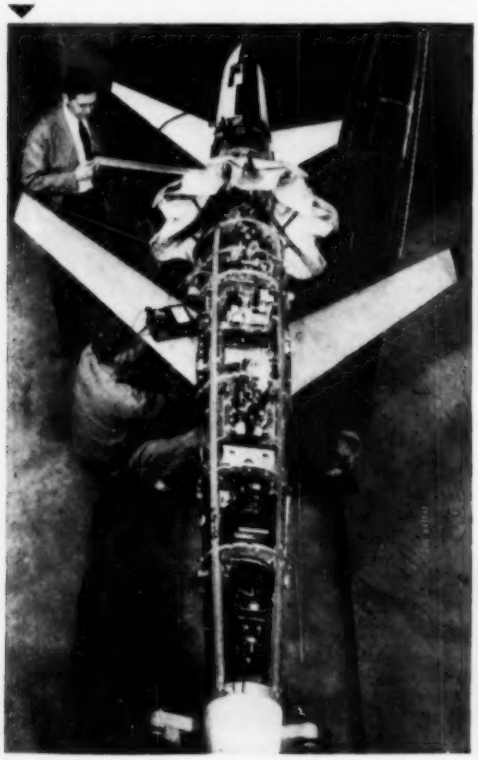
Sweden builds it own private airplane type. It is the *Safir*, built by the SAAB Aircraft Company which also produces the Scandia airliner and several military models, including jets, for the Swedish Air Force. The *Safir* is a three-place, low wing monoplane with a retracting tricycle gear. It is powered by a 145 hp Gipsy Major and is a trim looking craft with a (*Continued on page* 58)

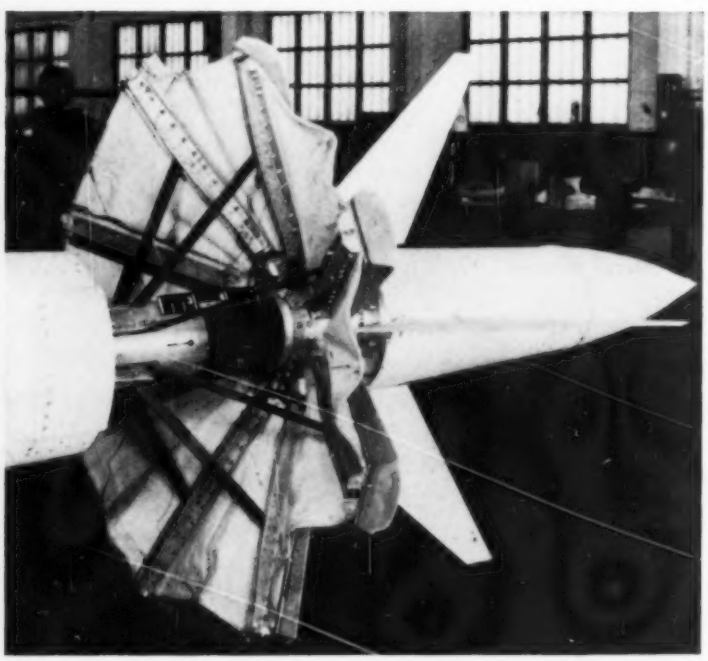
Sweden's lakes are a valued aid to navigation, though the author found out that too many landmarks can be just as confusing as none at all.

"Needle Nose," 1,000-lb. free-falling missile shackled beneath a P-61, is being carried seven miles aloft to be released by NACA researchers over the California desert. Reaching supersonic speed in its long dive, the instrument-packed "Needle Nose" will test and record the design and strength of the wing and tail sections which flare from its sleek sides. Data obtained supplements NACA wind tunnel tests on wing and tail configurations.

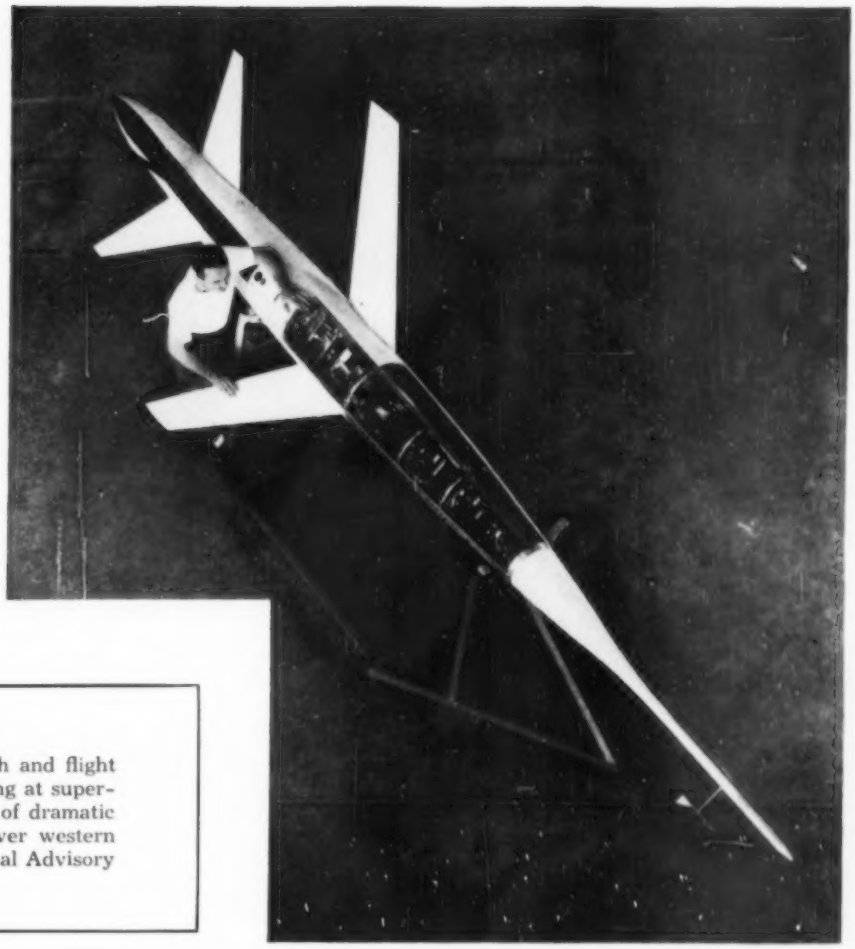
NEEDLE NOSE

NACA technicians install the instruments which will automatically record data during the rapid descent of "Needle Nose." Behind the experimental swept-back wings being tested are the automatic dive brakes which help bring the missile and its valuable instruments to earth intact.





"Needle Nose" and its instruments. As the missile plunges earthward, the delicate instruments inside continuously record and transmit data to receivers on the ground. Simultaneously, experts are tracking "Needle Nose" by radar to check on its speed and to note flight characteristics. The Ames Laboratory at Moffett Field, California, is one of NACA'S three major research bases where such tests are conducted.



By TERRY KAY

Charting in advance the strength and flight characteristics of aircraft traveling at supersonic speeds—that's the purpose of dramatic experiments being carried on over western wastelands by NACA, the National Advisory Committee for Aeronautics.

At left, a close-up view of the dive brakes. After "Needle Nose" passes the sound barrier, and at a pre-determined time, these brakes begin to open slowly. This prevents the shock attendant on sudden braking which would damage the delicate instruments. Later, when the dive brakes have slowed the missile to their full capability, the 36-foot long ribbon-type chute stowed in the tail of "Needle Nose" will blossom and ease the slender missile gently back to earth.

At right, this is "Needle Nose," back on terra firma after a seven-mile dive. The nose is buried in sandy soil, but the instruments are undamaged and the tail and wings intact. The parachute which cushioned the landing shock lies to the right. Damage to nose section will be repaired before next experiment.

LIGHTPLANE

ON JUNE 18, 1952, the 25th anniversary of my first flying lesson, I took off from the Detroit seaplane base to try for a world seaplane altitude record. I was out to beat the mark set by Helmuth Kalkstein of Germany in 1938—21,814 feet.

The weather was perfect, and the "Flying Flatfish VI," a 125 hp *Super Cub*, climbed beautifully. In the first hour I made 20,000 feet. I had started taking oxygen at 18,000. Above 20,000, the altitude gain was much slower. My full-throttle setting of 2,800 rpm's was now down to 2,400. Mixture control was very critical—one-quarter inch either way would cause a loss in rpm's. I was just holding my place over the seaplane base, headed into better than an 80 mph wind.

At 24,000 feet I was still gaining altitude very slowly, holding a course straight into the wind and enjoying the scenery for 90 miles around, when suddenly I started to smother. I reached back and felt my oxygen regulator. It was ice-cold. The hand was at zero, although my tank pressure showed 1,200 pounds. I pulled my mask to one side and started breathing deeply, opened my control valve wide and help my hand on the regulator in the hope that it would thaw out. After about four minutes it let go and I got a face full of ice.

After that I couldn't take a chance on regulating the flow lest the moisture in my regulator freeze again, so I just left the valve wide open. While concentrating on the oxygen I had lost 300 feet of altitude—now I had to gain all the altitude I could before my oxygen ran out.

When my pressure got down to 300 pounds, I idled the engine and started down. We had a new world record of 24,498 feet.

My enthusiasm for seaplanes dates back to 1939 when, realizing that airports were becoming overcrowded and that students would be safer with a landing place under them at all times, I bought my first *Cub* on floats. By 1941 I had two flight instructors and three planes to handle the 168 pilots and students who flew from my seaplane base in Detroit. During the war, as a flight instructor and Ferry Command pilot, I flew everything from P-51's to B-29's.

After the war I returned to Detroit, eager to get back to water flying. Charles Helin, Detroit fishing tackle manufacturer, had been one of the first to see the possibilities for seaplanes in the Great Lakes region. Before the war he flew his "Flying Flatfish I," a 55 hp *Cub*, from my old base. By 1952 he owned "Flying Flatfish VI," and offered to sponsor me in attempts at various world seaplane records.

Midget Start

I decided to start in the midget class, which includes all seaplanes with a "ready to fly" weight up to 1322.8 pounds. Reaching this weight with a *Cub* seaplane requires a lot of stripping down. After I had removed everything not absolutely necessary for flight, I loaded my oxygen equipment and chute aboard, climbed in and they weighed us in at 1,295 pounds.

The flight was supervised by Col. Dick Leavell for the National Aeronautic Association, representing the United States in the Federation Aeronautique Internationale, with headquarters in Paris. Official photos were made of all stages of preparation, and signatures of witnesses and reams of paper work were completed by Col. Leavell before take-off. The same was to be true of all later flights.

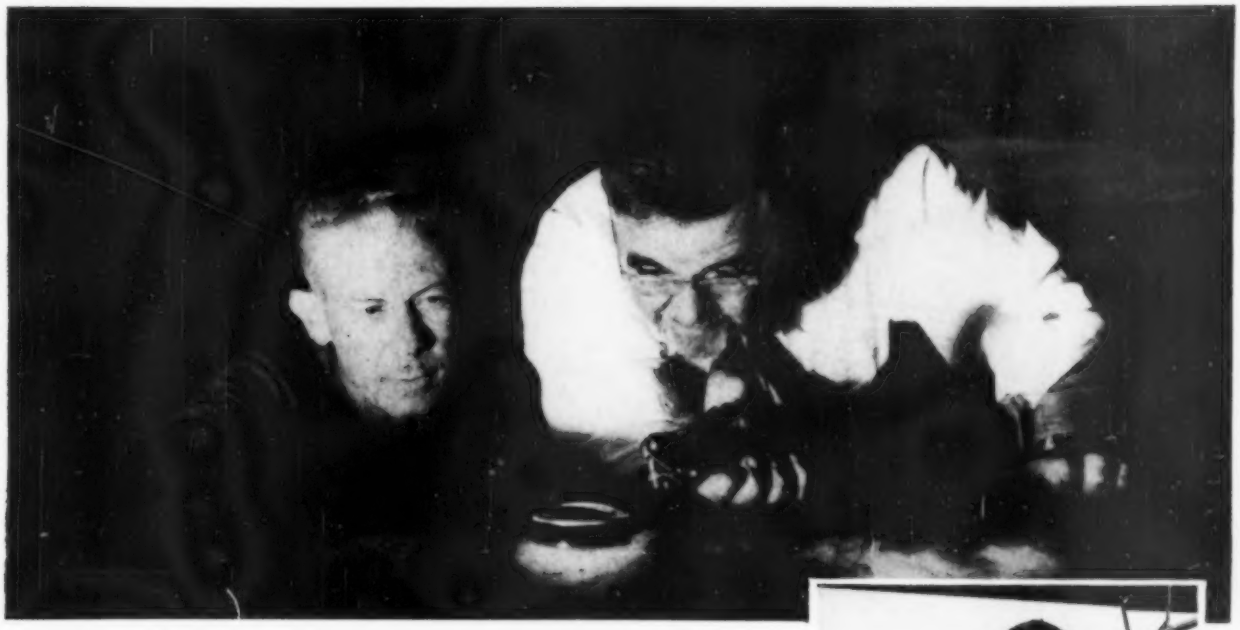
Speed Records Next

As a sequel to the altitude record flight, I set out to prepare for 100 and 500-kilometer speed runs in the lightest seaplane class. Weeks of preparation were entailed. The 50-kilometer course, accurate to one-in-5,000, was laid out on Lake St. Clair by the lake survey. Number one pylon was a cement marker on the lawn of the Grosse Point Yacht Club lawn. Number two was the water tank at Bell River, Ontario, on the lake shore, and number three was the channel light in upper Lake St. Clair.

Weight was really a problem now because I had to carry enough fuel for 310 miles. With 24 gallons of gas I was only two pounds under the weight limit. I had to make all the speed I could without exceeding head or engine temperatures, at the same time keeping gas consumption at a minimum.

This flight was more officially complicated than the altitude flight because it was necessary to have two observers with stop watches at each pylon. We were finally organized, and I took off from the Detroit seaplane base on the afternoon of September 29.

Temperature was in the high 80's and as I flew up the Detroit River and headed for the Yacht Club on Lake St. Clair, I could see that the lake was covered by haze and smoke from the freighters. I'd have to fly by com-



WORLD RECORDS

By CHARLES L. DAVIS

Opposite page: The all-important problem of weight! Sid Heathman checks the scales as Davis sits in the cockpit of "Flying Flatfish VII."

Above, top: Col. Dick Leavell, representing the National Aeronautic Association for the record flights, seals a gas tank while Davis kibitzes.

Above: Record-holder Davis checks his oxygen equipment. Davis, an operating engineer in the Detroit Fire Department and a member of that force for 20 years, is called "Detroit's Flying Fireman."

pass and hope I didn't stray too far off course.

I rounded the Yacht Club, then dropped down close to the water. As I approached the Canadian shore I was straining my eyes to see the water tank through the smoke. Finally I saw it, and had to make a quick course change of 20 degrees. It was the same on all three pylons.

By the end of the third lap I had the compass courses closely figured. I watched my temperature and gas consumption closely, and on the ninth lap knew I would have enough gas to finish and could even pour it on for the last lap.

I ended up back at the seaplane base with empty tanks and two more world records—better than 105 for the 500 kilometers and better than 108 for the 100.

Second Altitude Record

Before the close of the season I undertook another Helin-sponsored altitude flight—this time in the class for weights from 1322.8 to 2645 pounds. This record was then held by Harold Mistele of Detroit. I planned to fly "Flying Flatfish VII," a 135 hp *Super Cub*.

Stripping this down, I removed the starter, then the generator, battery, radio, transmitter, back seat, stick and luggage compartment. With enough gas added to put the "Flatfish" in the proper category, I was ready to take off last October 1.

A cold air mass had moved in from Canada and it was a bit chilly when I took off at 8:15 a.m. I had a thermometer taped to my wing strut and as I climbed the temperature went down rapidly. At 16,000 feet I was in a mass of suspended ice particles for about five minutes. They sparkled like millions of diamonds but didn't stick to the plane or affect the engine. I had anticipated colder temperatures and had taped my oil cooler. It held my engine temperature at maximum altitude to 130°.

This time I had a small oxygen bottle for lightness and had decided to go as far as possible before using it so that I would have more time at the top. I started to use it at 20,000 feet, with the bottle standing behind the stick in line with the heater. At this altitude frost began to form on the windshield and skylight.

At 25,000 feet the outside (*Continued on page* 60)

An H-19 carrying soldiers wounded in Korea lands on the fairway of the golf course at the Naval Medical Center, Bethesda, Md., after a 15-minute hop from nearby Andrews Air Force Base.

Helicopter Ambulance

"Egg-Beater" shuttle speeds war-wounded from air bases to hospitals.

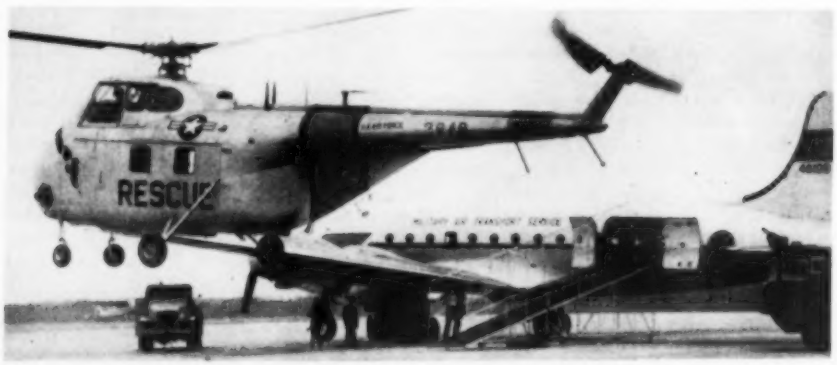
By HARRY LEVER

ONE by one the Korean wounded, in litters, were transported from the newly-arrived C-54M air evacuation plane and transferred to a waiting helicopter. With all aboard, the door of the egg-beater was closed. Her rotors began to churn. A sudden heave upward, and the Sikorsky H-19 was off on its brief mercy flight from Andrews Air Force Base, Md., to the Naval Medical Center at Bethesda, Md. Fifteen minutes later the 'copter landed on the golf course at the Medical Center and the patients were whisked by ambulance to the wards.

This recent flight formally inaugurated a brand new phase of air evacuation. It proved the feasibility of transporting wounded from an airbase to a hospital by helicopter in a matter of minutes as against an hour or more by ambulance. There are no traffic lights in the sky. The saving in time can be invaluable in serious cases.

Relay flights like these are expected to continue in several areas of the country, under sponsorship of the Military Air Transport Service. Their frequency will be determined by the availability of helicopters which can be spared from combat duty.

The helicopter shuttle program received serious consideration after one transported a child who was seriously ill from Andrews AFB to Walter Reed Hospital. The child, daughter of an Air Rescue Service sergeant at Hamilton, Bermuda, was flown to Andrews by MATS. It was urgent that she be examined immediately at Walter Reed for a brain illness. So the helicopter was used. It made the trip, of 15 air miles, in 13 minutes. An ambulance, with sirens scream- (*Continued on page* 65)



The right aircraft for the right job—a C54-M hospital plane flies Korean wounded to Andrews AFB, where an H-19 helicopter ferries patients easily and quickly to Bethesda Medical Center.

The Irish do it, too

Lush green fields are as hard as any when lack of petrol forces a landing.

By NORMAN ASHE

LATE ONE NIGHT at my home near Dublin, I received a call from a client in London. He wanted me to meet a charter plane from Canada arriving at Shannon Airport at nine the next morning. I was to photograph the unloading of a consignment consisting of the ingredients for a gigantic Christmas cake for the Lord Mayor of Belfast.

Nothing unusual in that, not to anyone who makes his living with a camera anyway. As a specialist in aerial photography, the problem of getting the 130-odd miles to Shannon before breakfast didn't worry me overmuch either. I planned to get up a bit earlier than usual and still make Shannon by nine in my Auster *Autocrat*.

I got up early enough and drove into town where I collected a very sleepy member of my staff who was coming along for the ride, then on out to the field. There was no sign of life at this little private field, the owner being asleep in bed. We wheeled out the Auster and checked the fuel and oil. Ten gallons of gas in the front tank, and I noted that the two big loudspeakers, which are part of my "sky shouting" equipment, were still bolted to the wing struts. Taking them off would have added 10 mph to my cruising speed and taken about half an hour. We hadn't that much time to spare so we left them on.

I usually fly with a big reserve of gas and should have felt happier with a couple more gallons but the keys of the pump were in the owner's pocket. I didn't feel like dragging the wretched man out of his warm bed at that hour so we took off with our 10 gallons, which should have been plenty. The office which housed the telephone was also locked so, instead of ringing Dublin Airport for a clearance to Shannon and at the same time having a word with "Met," I decided to fly to Coonagh, a small club field near Shannon, and get my approach instructions from there by phone.

We headed west under an overcast sky with ceiling about 1,000 feet and a fresh westerly wind. After about 50 miles that headwind was a good deal more than fresh and the "ceiling" was swirling well below the 500-foot mark. Had I known that "present weather" at Shannon at that moment, would have included the words: "35 knots, gusting to 50" I might have ridden a tail wind straight back to Dublin.

By this time, I had reached a region of relatively high ground. Flying in and out of cloud at 50 feet over the pylon-infested territory east of the Shannon Hydro-Electric scheme didn't appeal to me so I started a detour to the southwest to avoid the high ground.

I had negotiated this rather tricky part of the flight without mishap and when I topped the last rise I could see clear to my destination. Flying just under the cloud-base my altimeter registered 700 feet. The ground was steadily dropping away toward the coast and I felt that, at last, I had some spare altitude to use.

Flexing my muscles and glancing around the cockpit, my eye fell on the fuel gauge. The headwind, the detour and the loudspeakers had done things to nine of my 10 gallons of gas. The gauge showed just one gallon. Ten miles to go, headwind maybe 35 knots, airspeed 75 knots, fuel consumption 4½ gallons per hour—everything now depended on the accuracy of that gauge. I decided to maintain my present altitude and course and look for the first field big enough for a take-off. Landing on a dead engine never worries me because I was an army glider pilot during the war but, as a businessman, I just hate the expense involved in dismantling a plane and transporting it by road.

The ground below was far from flat and the fields seemed to average about 50 yards square with tall hedges. With the fuel gauge oscillating around zero and still about seven miles to go, I made sure that my passenger's safety belt was tight. Bert has supreme confidence in my ability to land anywhere under any conditions and he was reading a magazine. It had occurred to me that this fuel gauge might be like the one on my car which always says zero when it means one gallon. However, this proved to be wishful thinking because, just then, she quit.

I closed the throttle and cut the switches; I didn't want any "second thoughts" on the part of that engine to spoil my approach. Seven hundred feet doesn't give you a lot of time to make up your mind so I decided on the biggest field within reach (about 80 yards into wind) and made a near perfect approach. The strong wind made things look easy and there's plenty of flap on the Auster; she stalls at 28. At 150 feet on final approach, I saw the high-tension cables right ahead, (*Continued on page* 63)

AIRCRAFT BROKERS

By ROY CARLTON

AIDED and abetted by the scramble for planes and parts that came with Korea, a ceaseless evolution toward more efficient airliners, a lengthening list of executive transport users, and the gyrations in the personal plane market, the aircraft broker today has assumed a place of unique importance in the aviation world.

Fact is, the man often thought of as an aircraft broker may be less a broker today than he is a specialist and an expediter. Often he is selling aviation itself—or keeping it going at some remote spot on the globe. For while he may traffic in airplanes, war and a churning industry have forced him to play a role far greater in scope.

Like wiry Bill Wold, aeronautical engineer and head of William C. Wold Associates, he may be a consultant—"godfather" to corporations and businessmen who are neophytes at the aviation game.

Like the fabulous Babb Co., he may barter in airplanes but be pre-eminent as a stocker of scarce supplies—a "horn of plenty" whose warehouses sometimes produce "unobtainable" parts in volume lots.

Like amiable Jim Welsch, broker and aviation pioneer, he may be a trouble-shooter—an "aerial cowhand" who rounds up scarce items with the acumen that comes with experience.

Or, like W. Hayward Powers, Jr., energetic ex-yacht broker and guiding light of Powers and George, he may take pride that he is a broker and nothing more—an "aeronautical parson" who consummates the marriage between buyer and seller.

These are some of the men and companies that war has brought into a global business during one of aviation's most difficult periods.

The broker who just a few years back had a singular interest in the sale of a *Cub* in South Carolina may have to dispatch 25 *Cubs* to South Africa tomorrow. The broker who sweated out the sale of a DC-3 in South Dakota may have an order for four DC-4's in Saudi Arabia.

Almost daily he talks with a mine owner in Chile, an airline operator in Australia, a corporation executive in France, a bush pilot in Alaska, a distributor in Canada or a sales manager in the United States.

Like a Wall Street customers man he must gauge the market. He knows what's scarce and what is plentiful . . . what is in demand and what isn't wanted . . . what is obsolescent and what's coming into favor . . . what prices are bid and what are asked . . . who has an item and who might want it.

Because of this . . . and the fact that he knows planes and parts like he knows his name . . . the aircraft broker is perhaps better informed on what's going on and what's likely to happen than many other aviation executives.

That's fine, you say. But are brokers vital to the sale of airplanes? Perhaps the answer lies in the reason why W. Hayward Powers, Jr., began his business in 1947.

"It was after I roamed airports for months trying to buy an airplane," he said. "I finally found one I liked and bought it. But later I spotted another a few miles away in better shape and for less money."

There and then Powers decided someone ought to set up a clearing house for buyers and sellers, one that could save both parties time, effort and money. He brought to the business the standards of the Yacht Brokers Association of New York. Developing lists of available aircraft, he ultimately expanded these into the thousands . . . some of the most extensive lists in the business . . . of which 30 to 40 might be the same type or model.

Perhaps the measure of the brokers' importance in the industry lies with an operator in Alaska . . . a man too busy ferrying supplies such as pipe, lumber, iceboxes and machinery to come to the States and look for a plane. Spotting Jim Welsch's advertisement, he commissioned the broker to buy a Howard. Then, because he was so well satisfied with the plane and price, he asked Welsch to get him a *Widgeon*.

Perhaps the measure of the broker lies with foreign governments like South Korea which

Harassed dealers in used aircraft mop their brows and sigh for return to the buyers' market—but that day is not yet in sight.

W. HAYWARD POWERS, JR.
Owner,
Powers and George

JIM WELSCH
President,
Jim Welsch Aircraft Sales

WILLIAM C. WOLD
Partner,
William C. Wold Associates

bought 10 AT-6 trainers through the Babb Co., just in time to have them strafed out of existence by their northern "brothers." Or with Sweden, which asked Babb to help find 115 AT-6's after the Korean war started . . . or with South Africa which tried to get 45. The Swedish PBY shot to the bottom of the Baltic last year by the Russians was a plane supplied to Sweden by Babb.

Perhaps the brokers' measure lies with big name corporations like Continental Can and General Tire . . . companies that buy and sell heavy transport aircraft through aircraft brokers. Or perhaps the measure lies with the businessman who is devoid of aviation knowledge except to know that he wants a business plane—a man with no idea what type or model he needs or where to get it or even what price to pay until a broker looks into his problem.

And, what a frantic, even fantastic, affair the corporate-transport market has been since the Korean war started!

Among other things the North Koreans destroyed when they crossed the Parallel was the equilibrium of the used transport market. The war immediately produced price-rocketing, and plane-snatching. During the first two years, getting your hands on one of the more popular transports was like striking oil. Planes such as the DC-3, DC-4, C-46, *Lodestar*, *Widgeon*, *Goose* and *Mallard* became so scarce they doubled and tripled in price.

To give an idea of just what happened, here are some representative figures supplied by Joseph Barta, partner in William C. Wold Associates. (Note: Unless otherwise indicated, the figures apply to complete airplanes with all-around executive plush and equipment.)

AIRCRAFT	PRE-KOREA	POST-KOREA PEAK
Beech D-18S	$40,000	$60,000-$70,000
Lockheed *Lodestar*	$60,000	$135,000
Douglas DC-3	$100,000	$165,000-$200,000
Douglas DC-3 (Basic)	$20,000-$25,000	$90,000
Douglas DC-4	$300,000	$750,000
Grumman *Widgeon* (44A)	$15,000	$25,000
Grumman *Goose*	$25,000-$30,000	$50,000-$60,000
Grumman *Mallard*	$85,000	$170,000
Curtiss C-46 (Basic)	$30,000	$85,000-$100,000

The price rise began the first week of the war and continued to climb as our troops retreated down the Korean peninsula. Airlines, corporations, freight carriers —everybody—scrambled to buy what shortly before was considered obsolescent equipment. Within 30 days after the communists struck, it took a mighty sharp sleuth to find a respectable transport at a respectable price.

Hayward Powers tells of a commitment he had to supply a DC-3 to General Electric. He shopped around, located 15 with different price tags and informed the company on a Friday afternoon it could have its choice if it acted fast. Company officials agreed to meet with him Monday. But by then just three of the planes were left. Some one had snapped up an even dozen over the weekend. One of those left was a plane that had been used by Winston Churchill and GE settled for that, cigar butts and all.

Within a very short time, the average broker was out of the market completely. There were no planes to be had. Three major reasons can be cited for what happened:

1. Uncle Sam commandeered four-engine airliners for the Korean airlift and took over the bulk of production, thus interrupting the flow of new equipment to the scheduled carriers;

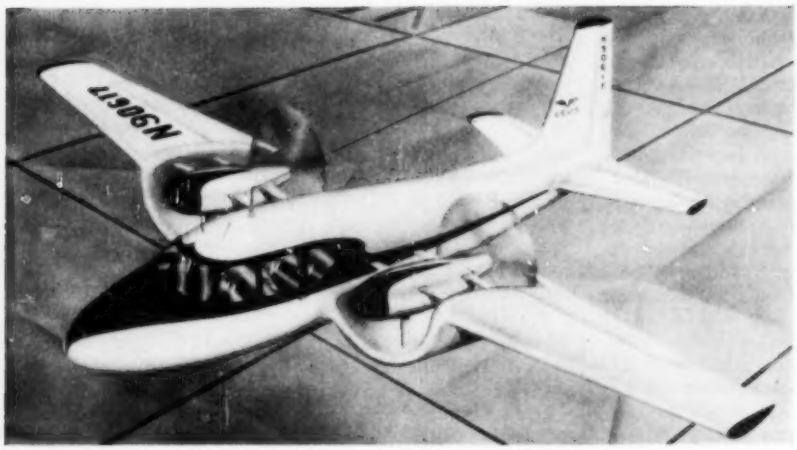
2. The airlines, taking the nod from Uncle Sam, not only stopped retiring obsolescent aircraft but began buying them back again;

3. Corporations jumped aboard the bandwagon when a rash of defense orders demanded wider travel by company executives. They remembered the shortage of airline seats in World War II and decided that time is more important than money . . . especially when a company plane is a deduction on the excess profits tax.

Demand far exceeded supply the first two years of the war. Prices were firm (tough (*Continued on page* 46)

CESSNA 318

The drawing at right shows the USAF's first jet trainer, the Cessna 318. The aircraft will be powered by two 900-lb. thrust "Marbore 352" jet engines designed by the Societe Turbomeca, Bordes, France, and built in the U. S. by the Continental Motors Corp. Wing span of the new trainer will be 33'; length, 27' 1"; height, 9' 10". Gross weight will be approximately 5,600 pounds.



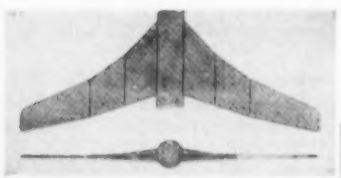
CHANNEL WING

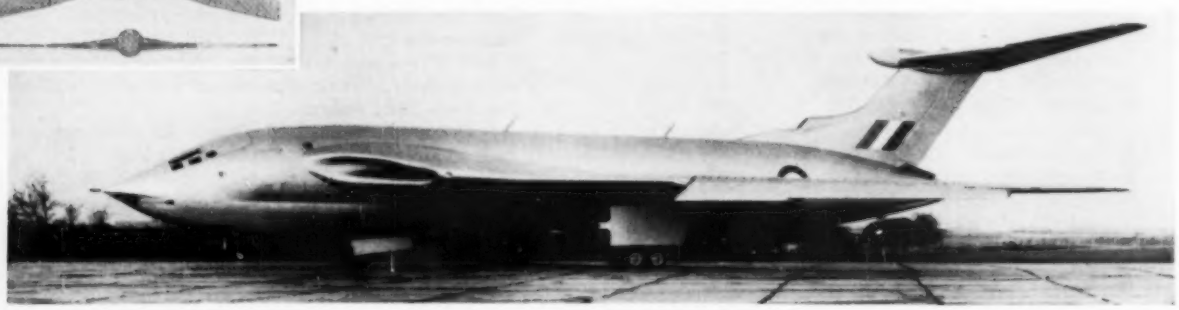
Above is a drawing of the Custer Channel Wing model CCW-5, a twin-engine prototype scheduled to be test flown soon. Incorporated into the design of the Baumann *Brigadier*, the channel wing is expected to permit the aircraft to hover like a helicopter, yet fly faster than a normal plane of similar size. Inventor Willard R. Custer expects the plane to take off at 5 mph, hover and cruise at 250 mph.

Have you seen?

CRESCENT JET

Below is Britain's crescent-wing, 600 mph "superbomber," the Handley-Page H.P. 80 *Victor*, recently test flown. Four Sapphire engines power the two-deck jet after which an intercontinental airliner, capable of carrying 150 passengers over long distances, will be patterned. At left is diagram of crescent wing, said to insure good control at sonic speeds.





CESSNA 310

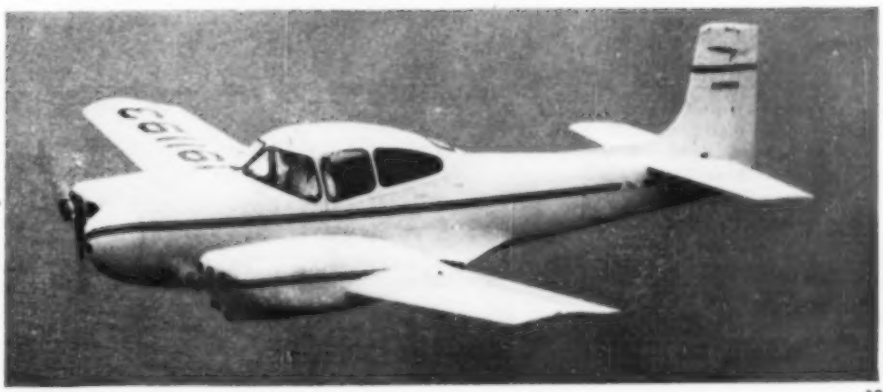
New entry in the private and business plane field is Cessna's twin-engine model 310. An innovation in the private plane category is the use of wing tip tanks, which permit the wing space normally used for fuel to be utilized to house main landing gear wheels. Powered by two 225 hp Continental engines, the 310 seats a pilot and four passengers and has an outside door to the baggage compartment. Overall length is 27' 1", wing span including tip tanks is 36' 1" and height is 10' 2" in three-point position. With the tail depressed, height is 7' 6". Performance figures will be issued following current flight tests. Production starts in '54.

FRENCH DJINN

The jet propelled helicopter prototype SO.1220 *Djinn* is shown in its first flight. Propeller of this single-engine 'copter is actuated by a Turbomeca Palouste compressed air unit, with no combustion within the blades. Simplicity and light weight (its empty weight is 550 lbs.) are principal advantages.

RILEY TWIN NAVION

At right is recent photo of the Riley Twin Navion. Conversions of single-engine Navions to twin-engine configuration are being made at Fort Lauderdale, Fla., by Riley Aircraft Corp. Present installation of two 140 hp Lycomings will be changed to two Lycomings of 150 hp each starting in May. Conversion requires 30 days.



I learned about flying from that!

"Mop Mop" knew the theory of inverted flight. Trouble was, theory went only so far.

By LT. BRIAN POWER-WATERS

I HAD soloed the T-6 about a week before and was eager to build up my time in the sky. That T-6 is a beautiful ship, responsive to the controls, good for acrobatics, and forgiving enough to keep the worst pilots out of too much trouble.

After passing one more supervised solo, I would be free to practice acrobatics on my own. A supervised solo is, as the name implies, a solo flight conducted under direct supervision of your instructor. He remains on the ground by the control truck with the radio-telephone in one hand, and a rabbit's foot in the other. It is a comforting feeling to know that you are being watched by a highly skilled instructor.

I managed to get the T-6 up and around for three landings which seemed good enough to my instructor so he called me over the radio and said to taxi over and pick him up. I was interested in seeing the expression on his face, but, as usual, it told me nothing. He climbed in the back seat, and we winged our way back to the home field. I waited patiently for some criticism over the inter-com, but none was forthcoming. He was keeping within the code of check pilots—keeping silent after the check period is over. After we landed, my instructor gave me the glad tidings. I had completed my last supervised solo; I was on my own at last!

That night my roommate, Walt, and I agreed on where in the air we would meet so that we could watch each other doing acrobatics and perhaps be able to point out faults in each other's flying. Walt had just completed his supervised solos, and we were both eager to get our acrobatics perfected, as our next check would be coming up soon.

The author and his T-6, right-side-up.

Next afternoon I took off, headed for the dam that was our rendezvous, climbing meanwhile to 10,000 feet. After stooging around for awhile, waiting for Walt, I punched Easy and called "Rag Mop," the code name we'd agreed on for the day.

"Mop Mop" (my code for the day) was the immediate answer and the next thing I saw was Walt doing a loop at two o'clock. We went up and down the lake doing our stunts. First Walt would put on a show and then he would be the audience and I would try my tricks.

After doing the prescribed curriculum for more than one hour, I decided to try something that I had heard upperclass men discussing. I called "Rag Mop," and told him to watch me. I gave the area a thorough clearing by doing a 180 turn in both directions. I eased the stick forward and, when I reached 160, sucked back on the column.

As I started to feel myself being pushed through the floor, I started a roll to the left, using left stick and left rudder until I got on my side. Here, I applied top rudder momentarily until I got over on my back where I neutralized the rudders and applied forward stick pressure. The airspeed dropped to 130 and I was losing altitude but I was up there, fat, dumb, and happy on my back. I felt I really was master of the ship. The engine started to quit so I reached down and switched the tanks. I had heard that this would keep the engine running longer, which it did. It roared to life again, and I began to get an increase in airspeed and altitude. It lasted for a few seconds, then started to die again. I quickly switched tanks again and the same gratifying roar filled the air. I glanced at my altimeter and saw that I was now down to 7,000 feet and quite low enough for me to be inverted by myself, so I decided to roll over.

As soon as I leveled out, acid from the battery began spraying all over the cockpit. I quickly put my hand over my eyes and tried to let down by squinting through a space between my fingers. If I only had some goggles —but we never wore them. In a matter of seconds hot oil began spraying over the windshield, cutting visibility down to almost nothing. The engine was still running smoothly. My instruments were all within their normal operating limits. I placed the generator switch in the "Off" position hoping it would eliminate the acid spray, but it had no noticeable effect.

I opened the canopy and tried to fly with my head outside but the hot oil was too much on the outside, and the acid was unbearable on the inside. I called Bag Tower and told them of my plight. They said I would be cleared for a straight-in on 17, and that the pattern would be clear for this emergency. A straight-in approach is a rarity for a cadet and, for the moment, I felt like a general.

Five thousand feet was going to be my limit. If the acid spray had not decreased sufficiently by that time, I would hit the silk. I had often wondered how I would feel about bailing out if my time ever came. Well, the time was here and believe

(*Continued on page* 63)

AIRCRAFT OWNERS AND PILOTS ASSOCIATION

AOPA NEWS

Aircraft Owners and Pilots Association is a service organization for the private pilot or aircraft owner. AOPA's full time staff is devoted to helping the individual pilot. Its aim is "To make flying more useful, less expensive, safer and more fun."

Headquarters address is Box 5960, Washington 14, D.C. Members also receive a special AOPA edition of FLYING, newsletters and confidential aviation data. Opinions expressed in this column are not necessarily those of FLYING Magazine.

CUBAN SYSTEM STARTS

More than a year of planning and negotiating, largely between officials of AOPA and the Cuban Government, came to a successful conclusion January 19 when the new streamlined system governing the flight of private aircraft between the U.S. and Cuba officially started.

After more than two years of unsuccessful efforts to get the Cuban Government to eliminate the exorbitant fees charged AOPA members in Cuba, and simplify the tremendous amount of red tape that was involved in even the simplest flight in that country, AOPA finally was forced—in January, 1952—to warn all members to stay out of Cuba until further notice. AOPA regretted having to adopt that policy, because Cuba is the gateway to the entire Caribbean area, and AOPA's ban greatly reduced the amount of non-commercial civil air traffic that went into the Caribbean countries.

In mid-1952, however, a new Cuban Government took office, under Gen. Fulgencio Batista. Soon thereafter several AOPA members in Cuba, particularly Guillermo Alexander (AOPA 70778), went to work on the project with Dr. Antonio Perez Benitoa, director-general of the Technical Services of the Presidency, and son-in-law of President Batista.

Those efforts were culminated in a final meeting in Miami early in December, when the complete new program was agreed to by U.S. and Cuban representatives.

Part of the new program includes a streamlined automatic flight-plan notification system much like that which has already proved so successful on the U.S.-Canadian and U.S.-Mexican borders. Under this system, both U.S. and Cuban pilots simply file a flight plan, which serves as automatic notification of both the aviation services in the country to be entered, and of the customs, immigration and public health services as well.

In Cuba itself a number of drastic changes have been made. Landing fees have been eliminated. So have customs and brokerage fees. The flight-plan service also is free. And U.S. pilots will be as free to fly around Cuba as Cuban pilots are in the U.S.

AOPA devoted so much time and effort to this program because it affects all civil flying throughout the Caribbean area and, to a lesser extent, down through South America.

RADIO FOR VFR

Because of AOPA's continued insistence that the CAA's radio aids must be operated and maintained for VFR flying as well as IFR flying, the CAA—at the direction of the Air Coordinating Committee—now is drafting a program which, if accepted, will officially recognize the need for VFR radio aids for the first time in U.S. aviation history.

The present CAA policy—which AOPA discovered to its amazement during joint Government-industry meetings on the decommissioning of the low-frequency radio ranges—is to officially operate and finance all the radio navigation aids in the U.S. for IFR operations only. The use of these facilities for VFR flying today is—legally, at least—simply a coincidental by-product of the fact that the aids are there anyway.

Once that CAA policy was unearthed, AOPA voiced its strong disapproval of a system which, in reality, is set up for the primary use of the airlines, the military and, to a small degree, of a few non-airline civil planes that do make it a practice to fly IFR. But, as AOPA pointed out, the vast majority of those who fly do so entirely VFR, and hence are actually not entitled to any radio aids, according to the CAA policy.

This entire matter came to a head during the low-frequency range conferences because AOPA discovered that the new omni system of ranges, which is to replace the low-frequency system, is being installed only to give reliable coverage down to the minimum en route instrument altitudes. In the Rocky Mountains, for example, that altitude frequently is several thousand feet above the general surface, because it is designed to assure clearance of the highest mountains in the area. Because omni is line-of-sight (unlike the low-frequency ranges, which could be heard at any altitude, including on the ground), the CAA policy to only assure coverage to the minimum en route instrument altitudes has, in many areas, wiped out any omni coverage at altitudes widely used by VFR flyers.

Now the CAA is working on a paper that would establish, for the first time officially, a requirement for these radio aids to serve VFR flying, just as the requirement which now exists solely for IFR flights.

COCKPIT CARDS

AOPA again has a supply of the popular cockpit cards now being used throughout the country. The cards come in a set of three, with six sides. They are enclosed in a heavy-duty transparent plastic envelope.

The set, which sells for $1, is a great aid to pilots attempting to make their wishes known to ground crewmen from the cockpit, when the engine is running. The cards are printed in giant black letters, and carry the following messages: PARK, GAS, A&E, TIE-DOWN, HANGAR and LOOK BUT DON'T TOUCH. The latter has proved useful when left in unattended parked planes.

CORPORATION PILOTS

Corporation pilots who are AOPA members have called AOPA's attention to a problem involving their classification by the Wage and Hour Division of the Department of Labor. At present, those pilots are classified as ordinary employes, and are subject to keeping time records and being paid accordingly.

Some of those pilots have asked AOPA help in getting them reclassified as professional-executive personnel, to exempt them from the elaborate time-keeping problems they now face. The problem came up recently as the result of Wage and Hour Division action in asking corporation pilots for time records.

TRANSCONTINENTAL CRUISE

AOPA is cooperating with the National Junior Chambers of Commerce in arranging a transcontinental handicap air cruise for stock-model single-engine civil planes, from April 25 to May 2. Each entrant will be individually handicapped, with the major emphasis being placed on normal cruising operation of the plane, and navigational skill by the pilot.

The cruise will start at Philadelphia and end at Palm Springs, Calif., following a route through Harrisburg, Pittsburgh, Columbus O.; Indianapolis, Terre Haute, St. Louis, Springfield, Mo.; Tulsa, Oklahoma City, Wichita Falls, Abilene, Big Spring, Wink, El Paso, Columbus, N. M.; Tucson, Phoenix, and Blythe, Calif. Tulsa and Phoenix will be mandatory stops.

Further details are available from AOPA National Headquarters.

OPERATORS' CORNER

HELICOPTERS, HO!

All who are keeping an eye cocked for significant developments in the helicopter field will find food for thought in the following items:

Helicopter mail service is now being furnished to 92 American communities.

* * *

Currently using a total of 13 rotor craft, the helicopter operators in Los Angeles, Chicago and New York already have carried more than 28 million pounds of mail while flying almost 2.5 million miles.

* * *

Use of helicopters for powerline patrol by the Bonneville Power Administration has saved BPA $1.35 for every mile patrolled. Ground methods cost $2.75 per mile, while helicopters cover the system at an average cost of only $1.40 per mile.

* * *

It is expected that Los Angeles Airways, Inc. and New York Airways, Inc. will begin helicopter passenger operations sometime during 1953.

* * *

The Port of New York Authority predicts that by 1960 about 25 per cent of air travelers who normally use airport taxicabs and about 10 per cent of those using airport buses or limousines in the metropolitan area will use helicopter "aerocab" service.

* * *

A two-place helicopter selling in the price range of a Cadillac and operating in the cost range of a high efficiency four-place aircraft, has been predicted for production within the next five years by Stanley Hiller.

* * *

BUSINESS PLANES

Corporation-owned aircraft now total about 9,500. It is significant to note that 7,800 of these are single-engine "business" planes, and 1,700 are multi-engine "executive" planes.

* * *

AIR DEFENSE COORDINATION

The Air Force is making every effort to cooperate with civilian plane owners and operators in matters concerning the air defense of the United States. However, recent meetings between operators and Air Defense Command units indicate that a greater understanding of the problems involved is needed by many civil pilots.

Indication of this need is found in the many fighter interceptions that must be made because of failure by civilian pilots to file flight plans in Air Defense Identification Zones. Fighter interception procedures are outlined in the Airman's Guide.

Clarification of the Red Warning condition during an emergency is also needed. Present procedure would call for the downing of any aircraft in the affected area. However, some civil defense agencies are planning to use aircraft for appraisal of bomb damage, etc. Any aircraft dispatched on such missions would be subject not only to interceptions by fighter aircraft but also by anti-aircraft batteries as well.

Civil pilots also should be advised that utilization of radio direction finders during a military emergency will be of no use whatsoever as a navigational aid. The FCC advises that plans have been established to change the frequency of local radio stations to prevent use by enemy aircraft of radio direction finders.

* * *

FOR THE DOLDRUMS

The Illinois Department of Aeronautics believes that, in the last analysis, any doldrums in the fixed-base operations business will be remedied most by self-help, and that the proposition is primarily one of "survival-of-the-most-energetic." However, in an effort to help operators to help themselves, the department has made a number of suggestions as the result of an extensive survey. Briefed, they are:

1. A combination residence-administration building in which the operator could live, free of charge, in return for his maintenance and improvement of the airport asset. His wife could tend the gas pumps and office while the manager worked part of the airport day in town at some other occupation. Thus the airport would be attended on a 24-hour basis.

2. One or more courtesy cars, run on a "kitty-pay" basis, would help materially to solve the transportation-to-town weakness of light plane operations.

3. Supplemental income is suggested from such enterprises as: (a) farm tractor repair work during off-season periods; (b) rental of unused hangar space for new car storage, machine shop, etc.; (c) sports such as golf driving range, archery, gun clubs and skeet ranges, golf course, football fields, night ball games; (d) supplementary dealerships for farm implements and machinery, motorcycles, motor-boats, local products; (e) on-highway service stations, cafes, motels; (f) farming airport property; (g) aerial photography for real estate agents, erosion studies, highway relocations, industrial site selections, crop rotation planning.

* * *

PENNY A POUND PROMOTION

One operator is building future business by offering rides to youngsters on a penny-per-pound rate. Say the average kid weighs 75 pounds. In a Super Cruiser the operator grosses $1.50. This pays for his gas, oil, and pilot. Some say this is bad business—no immediate profit. We think it is *good* business promotion.

* * *

HYLAN PLAN

Rochester, N. Y., operator Ray Hylan has proposed a two-part plan for a "grass-roots aviation shot in the arm." Part One calls for recognition of private initiative at private airports as the first step in building a First Power Air Force. Hylan believes that building such an Air Force means a return to the first element in aviation—the local airport—where the local young citizen discovers without aid of manual or tech regulation that he likes to fly *and can fly*. Once this intangible qualification is determined, Hylan says it is incumbent upon the local airport operator and the Defense Department to keep this young man flying; to encourage and reward him for his effort and to simplify the procedure leading to the more complex and rigorous phases of military flight training.

Part Two of the Hylan Plan deals with local taxes. Hylan proposes that local taxes be eased to reduce the closing of small airports, and at the same time open avenues encouraging the development of new private airports in communities that need them.

National Aviation Trades Association (NATA) is a service group that represents all service segments of the airport, fixed-base and air service operator. Its staff represents a federation of State Chapters and Members-At-Large. Its purpose is to fountainhead all activities of the American Operator, and to act as a sounding board for better public relations. Its aim: to improve air service operations and promote greater aircraft utilization.

Headquarters are located at 1346 Conn. Ave., N. W., Washington, D. C. Members receive a monthly "Washington News Letter" of confidential legislative and policy news in the making.

National Air Taxi Conference, same address, an affiliate of NATA, represents operators engaged in perfecting and standardizing a system of "through" air transportation.

Opinions expressed in this column are not necessarily those of FLYING Magazine.

Wilderness Bound

(Continued from page 13)

he wants to see.

There are two main air routes to the far northeast. The southern route goes up from Maine across the Maritime Provinces to Newfoundland and includes a 70-mile water hop. The northern route calls for crossing no open water and will take the pilot up into eastern Quebec, Labrador or (by a nine-mile overwater hop) Newfoundland. Any pilot with a private ticket and enough cross country experience not to get lost can make such a trip. A single day's flying from Quebec or Moncton, New Brunswick, will put even the slowest plane beyond the range of the highways.

Suppose you head for Newfoundland on wheels. A 300-mile range or better is essential on wheels for this route while a seaplane can make it with half that much. The best jumping-off place from the U.S. is Bill DeWitt's airport at Old Town, Me., which has both landplane and seaplane facilities, a CAA station and a link with the U.S. customs. The first step is to file your across-the-border flight plan requesting that Canadian Customs be notified of your ETA and port of entry.

The first airport stop may be Fredericton—120 miles away; St. John—130 miles away; or Moncton—210 miles away, all in New Brunswick, or Charlottetown—280 miles away on Prince Edward Island. The course may well depend upon the weather. If it's clear all the way and the aircraft has enough range you may stop at Charlottetown to clear customs and refuel, and go through to Newfoundland in the next hop. If your range is short, New Glasgow is only 110 miles from Moncton, 170 miles from St. John. Sydney, on Cape Breton Island, Nova Scotia, is 130 miles from New Glasgow.

Landplane Test

The next hop is the long one for landplanes. Whether you fly from Charlottetown or Sydney, you will start across water from Cape North at the northeast tip of the province of Nova Scotia. This point is 70 miles from Sydney and 140 miles from Charlottetown. The Canadian Department of Transport requires a flight plan for this hop and will permit private but not commercial flights in single engine ships. The weather requirements are 8,000-foot ceiling and five hours of daylight. The flight from Charlottetown, if you elect to come that way, includes a water hop which is also 50 miles from land to land but there are no weather or daylight restrictions there.

The hop from Nova Scotia to Newfoundland consists of 70 miles of water with an inhabited island 20 miles from the Nova Scotia side. Assuming a fair altitude, there are only 15 or 20 minutes when a pilot is beyond gliding range of land. Engine failures are mighty rare but always possible. If I were to have one, I'd rather have it during that 15 minutes than during any of my occasional hours of single engine night flying.

You can talk to St. Andrews Radio Station, on Newfoundland's southwest tip, before you leave the Nova Scotia side and be certain that in the event you ditch, the St. Andrews lads, bless them, will notify Harmon Field's search and rescue in a matter of minutes. You need a Mae West for each person aboard. The D.O.T. insists upon it. Twenty miles from Cape North you pass over St. Paul's Island, directly on your route, where there's a weather station but no airport. Fifty miles beyond is the southwestern tip of Newfoundland. From there it is 135 miles to Buchans, 235 miles to Gander, 180 miles to Portland Creek and 60 miles to Harmon Field, a U.S. Air Force Base to be used only in an emergency. Harmon will close your flight plan if you wish and it's certainly nice to have it there, just in case.

At Gander you are close to some ex-

Barry Wulff, 11, is proud of his catch from Western Brook, Newfoundland.

cellent hunting and fishing, which can be reached best by seaplane though rail, local highway or river boat will also take you to it. There are ready accommodations at Gander and seaplanes are available for charter. Southeast 120 miles is Torbay, airport for St. John's, Newfoundland's capital and a spot rich in historic interest. Southwest 165 miles lies the Island of St. Pierre with its 1,700-foot dirt strip. It is a French territorial possession and free port where perfumes and champagne cost no more than they do in Paris.

Buchans has 3,000-foot runways near a small mining town with limited facilities for vacationing.

Portland Creek Facilities

At Portland Creek, near the outlet of Portland Pond on Newfoundland's long northern Peninsula, there is a 2,300-foot private strip with good approaches and a seaplane base, a fishing and hunting lodge with outlying camps covering the best of Newfoundland's fishing. Seaplanes are available to take the wheelplane pilot to remote camps for salmon or trout, caribou or moose, depending upon the season. The nearest telephone is 70 miles away, the nearest road 60. Labrador lies 100 miles to the north. There will be some farms and a railroad or unconnected bits of highway beneath you on the trip to Portland Creek. The flight from St. Andrews to Buchans or Gander is over complete wilderness.

The same trip by seaplane calls for a little more thought in regard to refuelling but less worry about weather and alternate landing spots. Leaving Maine the pilot will find seaplanes based on the river at Fredericton and at the Yacht Club on Kennebecasis Bay near St. John. At Charlottetown he can land at the Yacht Club and have gas brought down in cans from the airport. Seaplane facilities at Sydney are poor. It is inadvisable to make it an overnight stop but gas can be brought down to one of the piers or to the beach near the city. The seaplane pilot must be more resourceful in arranging for fuel than the wheelplane pilot, but he can stop where he wishes and go where he wills.

The seaplane pilot with a short range ship may, by carrying extra gas in cans, sit down and refuel wherever convenient. On my first two trips across in a J3 seaplane without radio, I refueled at a saltwater pond near Cape North before hopping over the water. Once across the strait there are lakes and bays everywhere. There will be gas of some sort at Port-Aux-Basques, hard by St. Andrews, and at St. Georges, 55 miles to the north. Aviation gas is available at South Brook, Portland Creek, Gander and Bay Bulls Big Pond (St. John's).

The northern route, following the north shore of the St. Lawrence River and then the Gulf of St. Lawrence eastward from Quebec City, is a very easy one to follow. It will take you to Eastern Quebec, Labrador or, with an overwater hop of as little as nine miles, to the island of Newfoundland.

Leaving Quebec on wheels, there are auxiliary dirt strips at Grand Bergeronnes (130 miles), Forestville (170 miles) and Baie Comeau (220 miles) which is the present end of the road. Seven Islands, with a thriving airport, is 120 miles from Baie Comeau and 340 miles from Quebec. A few years ago it was a sleepy little village. Now it is a boom town, saltwater terminus of the railroad-under-construction to the rich iron deposits of Knob Lake some 300 miles to the north. It is a good jumping-off place for some of the best squaretail trout and ouananiche fishing on the continent.

Leaving the wheel ship at Seven Islands, a *Norseman*, chartered from Wings of the North, Ltd., will fly a party of four or five and luggage to the back country at 80 cents per mile. For example, Manitou Lake's outlet provides some exceptionally fine trout fishing and is only 60 miles away. Most of the Atlantic salmon rivers in this area are leased but arrangements may be made for fishing on the occasional stretches where fishing is open.

Eastward 100 miles you pass over Mingan, an inactive wartime field and 125 miles brings you to Havre St. Pierre where there is a dirt strip, 3,000 feet long. If I had a *Super Cub* I wouldn't

hesitate to fly it on down the north shore to the Strait of Belle Isle, then down to Portland Creek in Newfoundland, landing in small farm fields, on beaches or village roads if weather caught me during that 400-mile flight; but for the conventional land plane Havre St. Pierre is the last airport on the line, going east.

Airports on the Increase

Airports are blossoming out in the 300-mile stretch between Seven Islands and Knob Lake. Information on these airports and the possibility of flying to them can be obtained at Seven Islands.

Goose Bay lies 230 miles north and east of Havre St. Pierre. It is military and reportedly less than cordial to civilian pilots who come in.

The northern route is easy for seaplanes. Automobile gas is available at the Quebec City Yacht Club and a telephone call to Imperial Oil Co., Ltd. in advance will have aviation fuel waiting for you when you land. At Baie Comeau one may land in the river near the airport and have gas brought over in cans or go into a small lake about two miles west of town where the paper company bases its *Beaver*. Getting gas at either place is likely to take a little time and it is much simpler to carry on to Lac des Rapides, five miles north of Seven Islands Bay, where Wings of the North, Ltd. operates an active seaplane base. There, an attendant meets you at the float and fills your tanks from a gas pump, a luxury unusual in the wilderness. The seaplane base is a five-dollar taxi ride from the town, which is crowded. It's a safe place for your aircraft but not too convenient for an overnight stay.

At Seven Islands the eastbound pilot should check latest information on the availability of aviation gas and obtain a letter of authorization to the Wings of the North agents who handle it. Havre St. Pierre is the next place where gas is available. The landing there is in salt water and the plane can be brought in to the sandy beach.

Eighty miles farther east is Natashquan where naphtha, a white gas reputedly 80 octane, is available. Harrington Harbor, 190 miles east of Havre St. Pierre, has aviation gas. The harbor doesn't get rough but the tides and lack of a good beach make it less convenient than a lake or river for an overnight stay.

At St. Augustine, 65 miles farther to the east along the coast, is a Hudson's Bay Company post and naphtha. The town is on a river and the water is fresh.

There is usually gas at Flowers Cove, just across the Strait in Newfoundland. Portland Creek with a good seaplane base (both 80 and 91 octane fuel) is 90 miles farther south. To the north, along the Labrador coast, gas is where you find it. Arrangements may be made to have it shipped to any point in advance by coastal boat. Another way to travel is to carry as much spare gas as possible and never get beyond return range. At each stop make sure there is gas there to take you back on your return. At Portland Creek, where my partner and I run the fishing camps, we will know where gas is available or can make arrangements to have it wherever needed.

Seaplane pilots may be surprised at the eagerness with which they will receive help from anyone in the area. This is due to the many mercy flights made by bush pilots. In the wilderness airplanes save lives and a pilot is treated like a king. Someone will help moor your ship, find an anchor for you or help pull your ship up on the beach. If it takes the whole town to do it the whole town will turn out. They'll find you a place to stay and plenty of simple but solid food.

In traveling the shoreline one finds villages or individual fishermen every few miles. It is unusual to be more than a few miles from quiet water and a safe beach or anchorage where one can land to wait out weather. Weather service is sketchy east of Seven Islands. The best procedure is to keep a sharp eye out and, if the weather deteriorates too much, fly back to the nearest village.

Headwinds may be a problem, for winds come up suddenly along the shore. If groundspeed drops too low to make the next regular refueling point, it's wise to land and wait for the wind to drop (winds usually rise in the morning and drop toward evening) rather than run the risk of not getting all the way through.

Standard aviation fuel of the north is 91 octane. I've used it instead of 80 octane with no noticeable difficulty. Naphtha, a white gas reputedly 80 octane, is on hand at most settlements where it is used to run washing machines, gasoline lamps, etc. It doesn't smell like 80 octane but I've used it frequently and my engines have always run well on it.

High test auto gas is usually on hand for the higher compression boat engines and will do in a pinch, especially if mixed with some regular aviation gas already in the tank.

Acto, or low test marine gas, is available wherever there's a boat. I used it once and the airplane flew.

The pilot in the bush need worry little about the gas he uses but he should worry a great deal about the water it may contain. There is no substitute for care in filtering it. A felt or chamois strainer is the best insurance for good engine performance. I carry a lightweight funnel made from a one gallon paint can with a spout set into it in such a manner that it can rest on the wing while the gas drains through it. A felt strainer fits inside and up over the edges.

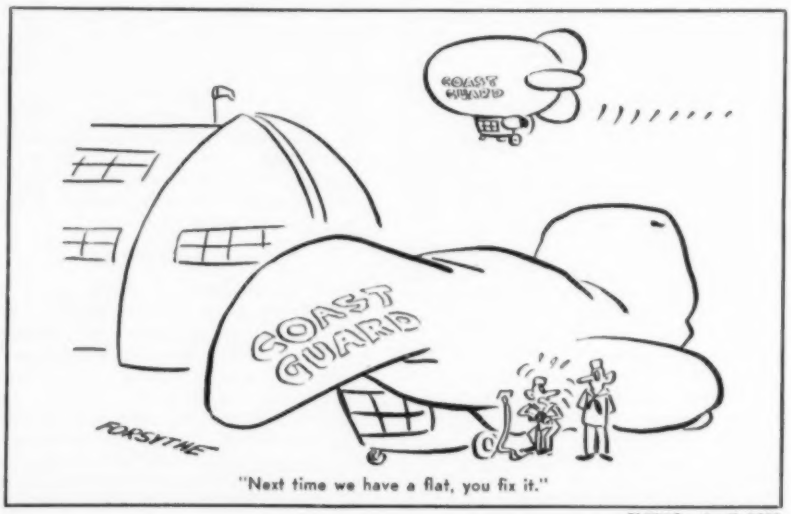
I recommend carrying one or two three-gallon gasoline cans. They are much easier to handle than the five-gallon size when balancing against a wing. Having cans of your own may save a lot of time if you have to gas up away from a regular refueling point. The cans don't take up much room and the extra six gallons of gas is nice to have in reserve when you're flying into unfamiliar territory. It is worthwhile at each landing point to find out as much as possible about the fuel facilities on the route ahead.

Canada is still operating on 3105 kc. (low frequency). If you have a VHF transmitter you can talk to almost all the Canadian stations on 121.5 (emergency frequency) and to the towers on 126.18 (military tower frequency).

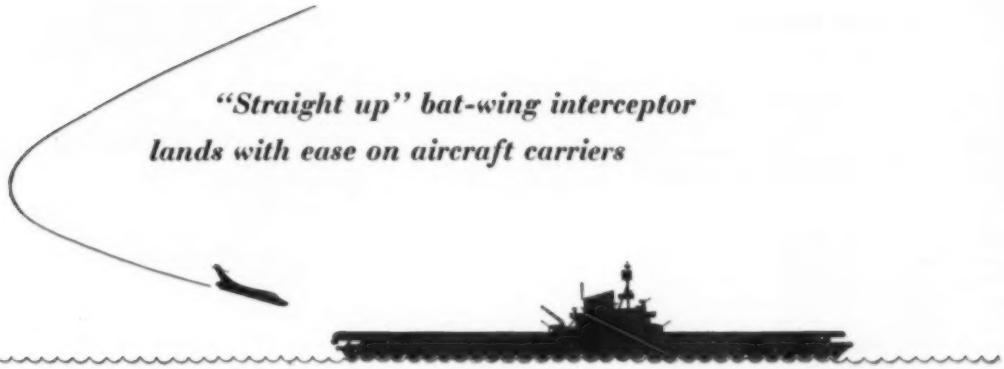
Radio for Border Flights

While a radio is not essential for flight in either Canada or the U.S., it is required when flying across the border. Those who wish to make the flight sans radio in a seaplane will find it easy to cross the border from Van Buren, Me., on the U.S. side of the St. John River, to St. Leonard on the Canadian side. There's a seaplane base on the U.S. side and to cross the border one needs only to land on one side and telephone across to the other before taxiing over. This procedure can also be followed in crossing the St. Lawrence river from Ogdensburg, N. Y., to Prescott, Ontario.

There's a real thrill to be gained by flying beyond the range of the automobile. The country will be fresh and unspoiled and the sport better. On such a trip the airplane will save the greatest amount of time compared to surface travel. It will take you beyond the range of ordinary tourists. The accommodations won't be deluxe . . . but the trip will be one to remember. END



"Next time we have a flat, you fix it."



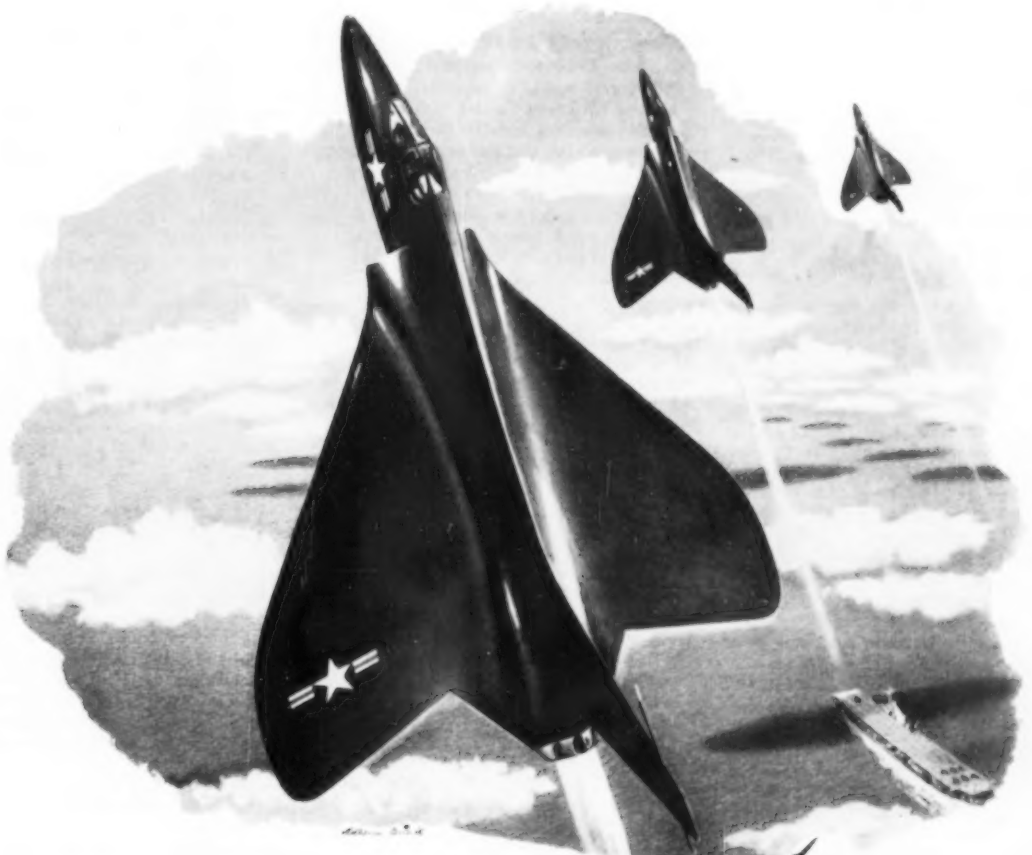
"Straight up" bat-wing interceptor lands with ease on aircraft carriers

___the Douglas F4D Skyray

Problem: to find a Navy interceptor to operate from aircraft carriers and meet the threat of today's fast jet bombers. Answer: the Douglas F4D Skyray.

With its mighty power plant and radical swept-back wings, Skyray zooms into action at blazing speed. Minutes after radar warning, it's off the deck and on station—ready to intercept approaching aircraft with a lethal load of bullets and rockets. Yet for all its power and speed, this agile interceptor lands at low speeds—is perfectly adapted to requirements of present carriers.

Performance of the U. S. Navy's F4D Skyray is another example of Douglas leadership in aviation. Developing both military and civilian planes that can be produced in quantity—to *fly faster and farther with a bigger payload*—is the basic rule of Douglas design.



Depend on *DOUGLAS* **First in Aviation**

Aircraft Brokers

(Continued from page 37)

is a better word). But the market has changed in recent months and, barring further emergency, planes should be available and prices, while not declining, are at least steady.

The thaw, which started when the government stretched out the air defense program, is due primarily to the fact that airlines again are getting, or are about to get, delivery of newer equipment (DC-6B's, Super-Constellations, Martin 404's and Convair 340's). This enables them to put older transports on the used plane market.

What happened in the corporate transport field happened also in the military "convert" and trainer market. The Babb Co. supplied a few relative figures.

AIRCRAFT	PRE-KOREA	POST-KOREA PEAK
AT-6 (Flyable)	$2,500	$12,000
AT-6 (Overhauled)	$12,000-$15,000	$25,000
Executive B-26	$85,000	$160,000
Executive B-25	$60,000	$160,000

The prices of converted, plushed-up bombers, of course, shot up because of the scarcity of regular transports. The AT-6's climbed for quite another reason. Demand for the popular World War II trainer by foreign governments, together with the fact that North American converted its production to the newer T-28, just about put AT-6's in a state of virtual extinction.

Recently purchased by Atlas Corp., the Babb Company's business is predominantly export and is split about 30 per cent airframes, 30 per cent engines and 40 per cent parts.

While prices of used engines and parts rose about 25 per cent after Korea, there are instances where scarce items doubled or tripled in price.

Indicative of what can happen is the case in which the Babb Co. offered an airline a batch of used engines for $1,000 each in 1948, thinking they would be an excellent source of spare parts if cannibalized. The airline, however, turned them down . . . only to come back in 1951 and buy the same engines for approximately $5,000 apiece. Why the price jump? The manufacturer had turned largely to military production.

While the lightplane market played follow-the-leader with the transport and military plane markets, there has been a striking difference in timing. Unlike the military and transport categories, lightplane prices did not begin their rise until some nine months after war began in Korea. And, unlike the thaw that already was evident in the larger aircraft last summer, lightplanes were still reveling in a sellers' market.

However, brokers like Hayward Powers accurately predicted a steady decline in prices throughout the fall and winter months. Reason: the high cost of living has priced many would-be buyers out of the market.

To illustrate the buyer resistance that has crept into the picture is the story of a Powers client who offered a 1951 *Super Navion* last summer for $17,000. When there was not so much as a nibble, he indicated that he might accept $15,000. Still no takers. But plenty of buyers were offering $13,000, Powers said.

The hike in the prices of used lightplanes was delayed after the war began in Korea because many fliers were forced to dispose of aircraft when they were recalled to service. Others discarded their planes under the impending threat of wartime flying restrictions. The same reasons prevented many people from buying.

However, in the spring of 1951, the cold facts of curtailed production and an inflated dollar caught up with the market. Prices started marching and in some models have been going ever since.

It couldn't be otherwise. Production of single-engine business and family aircraft was running at a rate of 4,000 units per year in June, 1950. Defense production, priorities and general shortages forced this down to less than 2,000 units annually the following year.

Lightplane Builders Few

Many manufacturers dropped out of the field completely and even some of those that stayed did so merely to keep the token tip of a finger in the pie. At the time of this writing, the major producers of lightplanes—Cessna, Piper and Taylorcraft—can still be listed on less than the fingers of one hand.

What is more, production and labor costs, which boosted new plane prices, had a corresponding effect on used plane quotations. The old rule that a plane depreciates 25 per cent in value each year went out the hatch like an attacking paratrooper. Jim Welsch and W. Hayward Powers supplied some representative figures to show what happened to a large segment of the market.

AIRCRAFT	MID-1949	JANUARY 1, 1953
Beech Bonanza		
Model 35 (47)	$6,500-$7,000	$6,750- $8,000
" A35 (48)	$8,000-$8,750	$9,000-$11,000
" B35 (50)	None	$12,000-$14,000
" C35 (51)	None	$15,000-$18,000
Bellanca Cruisair		
(1947)	$3,400-$4,000	$3,500- $4,500
(1948)	$5,000-$5,500	$5,000- $5,500
Cessna		
170 (49, all metal)	$6,000 (basic list new)	$5,000- $6,000
190 (48)	$10,000-$11,000	$10,000-$12,000
190 (51)	None	Up to $13,000
195 (48)	$10,000-$11,000	$10,000-$11,000
Ercoupe (48)	$2,700	$2,200- $2,500
Globe **Swift** (46-47)	$1,800-$2,500	$2,000- $2,600
Temco **Swift** (48 on)	$2,500-$3,000	$2,700- $3,500
North American **Navion** (1946-47)	$5,000-$6,500 (Note: First 1946 models listed new for $6,100)	$5,500-$7,000
Ryan **Navion** (1948)	$7,500-$9,500	$7,500- $8,500
(1949) (Late 50 and Early 51 Super)	$10,000-$12,000 None	$9,000-$10,000 $14,000-$16,000
Piper **Clipper** (49)	$2,500-$2,900	$2,300- $2,450
Republic **Seabee** (46-47)	$2,200-$2,775	$1,900- $3,000

The above list is by no means inclusive. It indicates what happened to four-place airplanes (the real market) and to some of the smaller craft applicable to the case.

Actually, the used lightplane market splits into two general categories, price-wise. On the downward trend are to be found earlier postwar models, tandem two-seaters and fabric-covered craft. There are a few exceptions (some noted above) that have gained favor with age and consequently their price is up.

On the even side are found later postwar models, the all-metal and four-place aircraft. The later models are favored because they are comparatively new and comparatively scarce. What's more, their prices are directly affected by new plane quotations.

Price Criteria

In normal times the prices of these planes would be governed by six factors (other than age and condition), Powers says. They are:

1. Total number of type manufactured.
2. Whether the manufacturer is still in business.
3. Comfort, utility and performance of the model.
4. Type of construction (fabric or metal).
5. Accessories installed.
6. The plane's reputation.

These factors, of course, affect prices even during a sellers' market, but not to the extent they do when production of new models is up, conditions are stable and buyers are calling the shots.

From a personal point, there is probably nothing brokers want more than a buyers' market. As Powers put it: Sellers don't need a broker when planes are scarce. But, when they are plentiful, it often takes a man with broad contacts and selling ability to dispose of a plane at a good price.

Powers also believes a stable secondary plane market is vital to the growth of the lightplane industry. A steady market for trade-ins stimulates the purchase of new models, he said. What is more, used planes at fair prices serve as an entree to personal flying for people who can't afford new models.

The closer the lightplane industry comes to the automobile business, where a dealer turns over three or more used cars for each new one sold, the healthier flying will be, Powers predicts.

He should know. For, like our other broker-specialists, he sits on an island watching the ebb and flow of the aviation tide around him. END

★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★

ATA ALUMNI

Ben Warne, a former member of the Air Transport Auxiliary which did ferry work in and from the United Kingdom during World War II, advises that he's in the process of forming an alumni organization for the 250-odd American members of that outfit.

Ex-ATA pilots interested are invited to get in touch with Warne at G. B. Warne Corp., 132 Front Street, New York 5, N. Y.

★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★

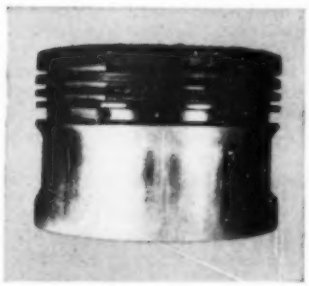
PLANE FAX

An Important Announcement for Light Plane Owners!

Here's a

NEW AVIATION OIL!

It keeps engines cleaner—completely eliminates pre-ignition caused by oil

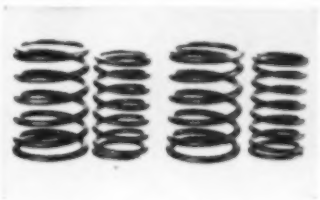


Ring grooves at 1030 hours using the new "RPM"

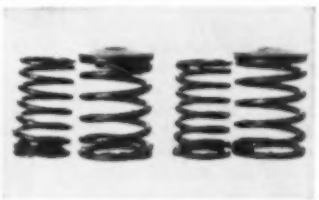
Ring grooves at 818 hours with top grade comparative aviation oil

New RPM Aviation Oil was developed for your light plane engine by years of exacting laboratory and flight tests in aircraft everywhere in the West. Never before has any aviation oil so successfully combined all four properties so important to your plane engine—*cleanliness, elimination of harmful effects of pre-ignition and rough running due to oil, low consumption over longer periods, and many, many more flying hours between major overhauls.*

Even under the severest operating and climatic conditions, "RPM" outperformed the other top-grade comparative aviation oils. For example—on 14 test aircraft using the new "RPM," wear was found to average less than .002 (two one-thousands) inches cylinder wear on engines that had gone as high as 1338 hours. No engine tested with our new aviation oil showed any trace of inorganic residues which could cause rough-running—and the new "RPM" left engines cleaner than ever before!

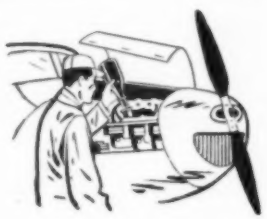


Valve springs at 868 hours using the new "RPM"



Valve springs at 818 hours with top grade comparative aviation oil

T.M.'S "RPM", "CHEVRON," REG. U.S. PAT. OFF.



TIP OF THE MONTH

Have your Standard Airport Dealer service your plane with the new "RPM." The cost compares with other top grade aviation oils . . . the result will be a cleaner, smoother-running engine for many trouble-free flying hours to come!

CHEVRON AVIATION GASOLINE

NEW RPM AVIATION OIL

STANDARD OIL COMPANY OF CALIFORNIA

WING TALK

KNOWN TO CAP'ers in every wing is Major Harold I. "Sam" Hill, National HQ staff officer, who, with Mrs. Hill recently returned from a vacation flight to the Caribbean in a Piper *Clipper*. Their itinerary, starting from Erco Field, Md., included Key West, Havana, Port au Prince, San Juan, St. Thomas, St. Croix, Antigua, Martinique, Barbados and Port of Spain.

NATIONAL CHAPLAINS' CONFERENCE

Two hundred Civil Air Patrol chaplains from the 48 states, Puerto Rico, Alaska, Hawaii and the District of Columbia will convene in Colorado Springs April 14-16 for the National Chaplains' Conference.

COLLEGE SQUADRON

The first CAP unit to draw primarily upon college students for membership has been activated on the campus at the University of Kentucky. The squadron staff is comprised of co-eds and male students already well trained in fields of communications, navigation, law engineering and journalism. They are filling CAP positions with which they are most familiar. The majority of the men have received or are now receiving Air Force ROTC training and many members have been CAP members for several years. Once the Lexington Squadron, as it is designated, has reached full strength it will begin training from 200 to 400 high school students in CAP ground courses.

CADETS FORM MSU

Cadets of the Bradenton (Fla.) Squadron have formed their own CAP Mobile Support Unit. The unit has a two-way radiophone; complete first aid equipment including stretchers; fire fighting equipment, wrecking tools and cooking facilities to be used in disaster operations. The cadets also have earned enough money to finance the purchase and equipping of a surplus reconnaissance car. Their next purchase is a lightplane for the air echelon of the MSU. Cadet Capt. James B. Golden commands the Cadet Squadron with Cadet 1st Lt. John B. Leffingwell as executive officer.

* * *

CAP Lt. Col. Donald T. Spiers, deputy commander of the National Capital Wing, has assumed additional duties with the Patrol. He is the newly-appointed director of CAP operations for the Northern Virginia Regional Civil Defense Program. Col. Spiers is one of the original members of CAP, having joined when the wartime Patrol was organized in 1941.

MERCY FLIGHTS

Civil Aeronautics Administration communications personnel at Acomita, N. M., and the parents of a Hedgwick, Kans., child will have reason to remember CAP as the result of two recent mercy missions. Carl G. McClain, station chief, became seriously ill while on duty. His assistant drove him to nearby Grants but the town's only physician was away on another emergency call. The assistant then contacted the Interstate Airways Communications Station at Albuquerque which in turn called on CAP. In one hour Maj. Fred Adams was on the ground at Kirtland AFB with the patient aboard his Convair L-5 liaison plane. Mr. McClain is now recovering. At Hedgwick, four-year-old Michael Slarrow was stricken by a brain tumor. An operation at the Mayo Clinic, Rochester, Minn., was needed to save his life. Kansas Wing AF/CAP Liaison Officer Maj. Kenneth Chatfield flew the child and his parents from Hedgwick to the clinic. Captain Ruet, an ROTC instructor at the University of Wichita, flew co-pilot. Lt. Col. James J. O'Connor, deputy commander of the Kansas Wing, also made the flight.

POWER SUPPLY

When the electric supply for the White Plains (N. Y.) Airport was cut off due to construction work CAP was called on to fill the gap. The administration building and passenger terminal were heated and lighted by a 25 kilowatt generator loaned by the White Plains Squadron. Other equipment was used for flood lights, public address system and as a standby power supply.

PUERTO WING COMMANDER CITED

The CAP Distinguished Service Award has been awarded to Col. Orlando J. Antonsanti, commander of the Puerto Rico Wing, CAP. The citation which accompanied the award read: "Col. Orlando J. Antonsanti has distinguished himself by exceptionally meritorious service while serving as commanding officer, Puerto Rico Wing, which has to a marked degree contributed to the successful accomplishment of the mission of the Civil Air Patrol."

* * *

On recent missions the North Baltimore (Md.) Squadron has successfully used carrier pigeons to supplement radio communications. This system was explored for possible use in the event radio stations were rendered useless. It was found that pigeons could be dropped to disaster sites as well as be released from planes in flight. The pigeons fly to their lofts and the owners then relay the messages to the proper CAP authorities. Maryland pigeon fanciers generously cooperated on "Operation Pigeon Lift."

* * *

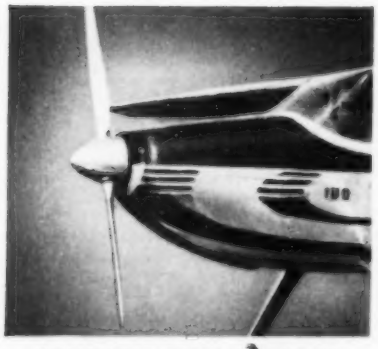
Twenty-five CAP pilots of the Illinois Wing have been commended by the Illinois National Guard for a ferry mission in which they flew 18 Aeronca L-16 liaison planes from Chicago to Tinker AFB, Oklahoma City, Okla. Lt. Col. Harold F. Pacha, of the U. S. Property & Disbursing Office, said: "The attitude of these pilots, their attention to duty, proficiency in flying and navigating were superior. Their adherence to the rules of safe flying left nothing to be desired and the friendly spirit of each toward the others and their leaders reflected an *esprit de corps* that is so highly desirable in a unit, yet so seldom found."

GETTING THE DOPE straight from the horses' mouths are CAP Cadet Lt. Winifred Engle of Detroit, Mich., and Col. L. A. Edwards, commander of the Michigan Wing. The "horses", in this case, are Lt. William M. Baker, radar observer with the 61st Fighter-Interceptor Squadron, Selfridge AFB, and Lt. John Ernest, jet interceptor pilot with the same outfit.

GREAT "GOLDEN YEAR" AIRPLANE

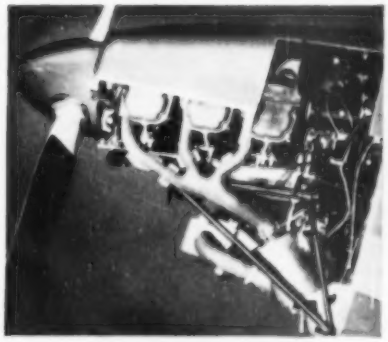
Offers Over 150 m.p.h. Cruising

ROOMY, LUXURIOUS INTERIORS



CONSTANT SPEED PROPELLER

"JET" TAIL THAT REDUCES DRAG



225-H. P. ENGINE . . .

At Moderate Price!

Never before in aviation's 50 years have business and private flyers been offered so much for their money! The "Golden Year" Cessna 180 is all new . . . and so beautifully designed that its flight characteristics are phenomenal.

It takes off in remarkably short distance—climbs over 1150 feet a minute—cruises at *well over* 150 m.p.h. —yet makes safe, slow landings in almost any short field. It's all metal —it has every comfort and safety feature you could ask for—yet it sells for more than one-third less than any other make of plane in the over-150-m.p.h. class. See it at your Cessna dealer—he's listed in the yellow pages of your phone book.

New Cessna 180

Cessna 180

Cessna Aircraft Company
Dept. F-4
Wichita, Kansas

Please send information on the new Golden Year Cessnas. I am interested in a Cessna 170____, 180____, 190 Series____.

Name_____

Address_____

City_____ State_____

Tennessee Plan

(Continued from page 15)

a hint of the driving force, promotion. With the Tennessee Plan—in fact, with anything as costly as flight training—you must promote constantly. You are as zealous as a stagestruck mother pushing her only daughter into the limelight. You radiate the freshest enthusiasm, too—the kind that once pulled every youngster in town to the community airport.

Actual flight is aviation's greatest promoter. But until the cost of private flying is reduced, we can't hope to reach the mass of people with this, our best salesman. The Tennessee Plan works this salesman overtime but it does not rely on him exclusively.

The program, in fact, takes the emphasis off flight alone and places it on sound groundschool courses recommended by CAA as prerequisites for private and commercial pilot licenses. These courses are given on the main campus and are free to any University student, whereas the flight training is conducted from Knoxville's all-weather airport and is financed by the student on the basis of hours flown. The cost of the flying portion of the program approximates the fee charged by the average local service operator. For each of four flight stages leading to a private pilot license, the student pays $99.

Flexibility is achieved by making either ground training, flight training, or both, available as an elective subject to students in any college of the University. Full scholastic credit is granted but no credit may apply toward a major and no credit is granted for training beyond that required for a private pilot license.

Under this arrangement it is conceivable that the University's contractor, Cook's Aero Service, could be placed in the position of furnishing ground training only—a service for which it receives no compensation. But Cook's is operated by Bill Cook, one of Tennessee's aviation pioneers. He knows, as should every other local service operator, that flying information usually leads to flying interest and, ultimately, to flight itself.

Progressive Interest

Take, for instance, the father who took his first airplane ride in our Aeronca 7AC trainer. How do you think his son's passive interest in aviation developed into an active desire to take part? The son had signed up for Transportation 111, one of the four groundschool courses but also one of hundreds of electives from which University of Tennessee students may choose in planning their study programs. What prompted that first step I can only guess. But I do know that by mid-quarter he was asking about the flight courses. He was given a demonstration hop and the next time his parents visited Knoxville, he brought them to the field.

Parents, incidentally, are important people to any educational program. With a son or daughter engaged in flying, they can become aviation promoters of the highest order. At the University, all students must submit written permission from their parents upon enrolling for flight instruction. Parents are encouraged to inspect the operations on campus and at the airport, are invited to take demonstration rides, and are told of the importance of aviation and aviation knowledge in the countless career fields which utilize flight or are directly allied to it.

Co-eds Welcome

Co-eds also come in for their share of attention. Their place in aviation may be more limited than that of men, but it exists. Too, we feel that until the mothers, wives, and sweethearts of the men who want to fly are sold on aviation, the promotion of aviation will continue to fall short of its potentialities. (About 30 per cent of the flight program students at the University of Tennessee are co-eds.)

If our experience is any indicator, there are thousands of American youth just like the boy who brought his father to the airport. These young people possess the desire to fly or to know about aviation first hand, but the desire is either dormant or frustrated for lack of opportunity. Or, they may have a strong desire but think flying is dangerous. When we find these potential recruits for aviation, we take them for a demonstration flight. We show them how easy it is to fly an airplane, show them the four fundamentals of flight—straight and level, the climb, the glide, and the turn. We demonstrate the built-in stability of the airplane, really show them the superiority of flight rather than scare them half to death as did pilots of the old school.

Most of these students endeavor at all costs to enter the flying portion of the program. The average flight operator can afford to follow this procedure. Experience has shown us that a free flight of 30 minutes will sell the program—if the student can finance the cost.

Cost is the primary—and substantial—limiting factor. Only a relatively small per cent of the average student body can afford flight instruction, but we are reaching these students whereas they have not been reached before, and we are whetting the interest of countless others who take just the groundschool training. In addition, both groups are from the ranks of higher education, the "cream" of today's youth.

Surprising the Experts

Some experienced aviation men predicted we would be lucky to enroll 10 students upon inauguration of the program last spring. The actual count was about 80, with 22 of them taking flight instruction. Enrollment the following fall quarter dropped off to about 50 students but with 25 of them taking flight instruction.

The overall decline was slightly more than can be attributed to usual dropouts, reflecting lack of personal contact at opening of the quarter in September. We are now studying ways to *minimize* the obstacles to personal contact at this time of year, obstacles such as fraternity and sorority activities, and the rush of getting settled and registered for classes.

Knoxville has some bad weather occasionally, but happily not for extended periods. The University program therefore operates year-round. Administratively, the program is under the wing of the Department of Transportation in the College of Business Administration. This again is a fortunate arrangement because Department Head William Way, Jr., has gained national prominence in the field of transportation education and offers a solid program in air transportation. Although the one-year-old flight program actually operates independently, accepting students from throughout the University, it is well for an infant educational idea to be associated with a strong guardian.

The Tennessee Plan, as now operating, admittedly is the proverbial "drop in a bucket." Unless it can be adapted for use by other universities, it will have little influence on aviation education as a whole. We know that it works in colleges, because of an excellent example about 160 air miles from Knoxville, and there are a few others throughout the country. The Tennessee example is at Murfreesboro, where a veteran flight operator, H. Miller Lanier, is now in his fourth year as Director of Flight Training at Middle Tennessee State College. Lanier operates on much the same principle as we do at the state university. His program started when students were still training under the G.I. Bill and the college originally furnished him land for his operations. A municipal airport has since been constructed at Murfreesboro where Lanier and Middle Tennessee State are conducting an eminently successful program.

Tips from Experience

In the hope that other fixed base or local service operators, and other colleges or universities will want to join forces for the advancement of aviation, I'd like to offer a few suggestions to the promoter—the man who, in large part, will determine the fate of the program:

1. Establish a good, solid contact with the educational institution. Find someone in authority who is interested in aviation and is willing to give active support;

2. Present a workable plan, outlined to the last detail both as to curriculum and operation;

3. Prove in advance that it will work, and do a constant educating job on individual faculty members;

4. Be prepared to stay with your plan through a series of committee meetings, delays and crises. At the University of Tennessee, the investigations, study meetings, arrangements and initial promotion required about a year;

5. Once your program is approved, promote it with every ethical means at your disposal, but keep in mind that as part of a college or university you will want to maintain a certain amount of dignity and restraint. The promotion must be constant, but stepped up prior to the beginning of each new class. END

"AOPA HELPS PILOTS IN TIME OF NEED!"

Says LOWELL SUMNER

AOPA Member A22708

"It's wonderful to have an organization like AOPA ready to help pilots in times of need —and so promptly, too. Today, when the pilot is pretty much on his own, it's mighty nice to have a helping hand in aviation legal and financial matters, as well as everyday flying problems."

Member Lowell Sumner first started flying in 1944. To date he has logged over 2900 hours and holds a commercial certificate with single engine, land ratings. He has owned in turn, a couple of Aeroncas, Cessna 120 and a souped-up Luscombe with a 108 h.p. Lycoming engine. Lowell works as a biologist for the National Park Service, Region 4. He flies for the National Park Service in Alaska and the Western States, taking air photos, counting game, mapping, etc.

AOPA Gives More and Better Service to Pilots and Plane Owners Than Ever Before!

- Distinctive lapel insignia and credentials!

- Aid of the Washington staff of AOPA in your personal flying problems, CAA licenses, regulations, legal difficulties, documents, employment, etc. Specialized services including map subscription service, aircraft title search, flight routing, etc.

- A $700.00 personal accident policy (flying only) to all active members without cost, increases $100.00 each year your membership remains in force until principal sum reaches $1,000.

- AOPA edition of Flying Magazine every month. AOPA Washington newsletter, plus special bulletins on new defense requirements and related data.

- Participation in advantageous insurance coverage available through well known aviation and life insurance companies.

- Hertz Drivurself System, Avis Rent-A-Car and TWA courtesy cards.

Full ***active membership*** in AOPA is available at only $10.00 per year—less than 3c per day. The personal accident insurance alone has a value of $3.50 the first year, increasing to $5.00 for the fourth and every ensuing year. 30c of the member's fee is paid to the AOPA Foundation, Inc. for air safety and research. (Those who do not wish to make this voluntary contribution to air safety may remit $9.70 in lieu of $10.00.)

Enjoy membership in the world's largest and friendliest pilot group which continuously protects and fights for your flying interests in government and other circles.

AOPA operates on a non-profit basis and is dedicated to the advancement of private flying. Use this coupon now!

Aircraft Owners and Pilots Association
National Headquarters, Dept. F-453
Post Office Box 5960
Washington 14, D. C.

I would like to apply for ***Active Membership*** in AOPA. Enclosed please find my check or money order in the amount of $10.00.

Name.....

Address.....

City.....State.....

Pilot License Number.....

Ratings.....

I first soloed an airplane at.....

Date of First Solo.....

I own aircraft, registration number.....

Make.....Model.....

Signature.....

IMPORTANT

I understand that I am to receive a $700.00 flying-only personal accident insurance certificate. (Restricted to the United States, its possessions, Canada and Mexico.)

.....
Name of Beneficiary

.....
Relationship

($2.00 of each year's dues are for my subscription to the AOPA edition of FLYING)

Royal Observer Corps

(Continued from page 27)

divided into five main regions called Areas; each Area was sub-divided into Groups, from five to nine in number. Each group controlled 10 to 12 clusters of observation posts through its operations room; each cluster consisted of three or four posts on a common telephone line and situated between six and 10 miles apart.

They Watched Night and Day

All observers were civilian volunteers. They came from all walks of life: there were parsons and plowboys, teachers and tinsmiths, housewives and clerks. They were commanded by an Air Commodore who was responsible to the Commander-in-Chief of the Air Defenses. From the outbreak of war every post maintained a constant day and night watch. Personal hardship was accepted cheerfully.

The post observer reported all aircraft seen or heard. He was aided by an instrument like a theodolite, which indicated on a gridded map the position of the aircraft sighted through it. The observer reported the position, direction of flight, estimated height, and number of aircraft to the observer operations room where plotters posted data on a map table. From observer reports tracks were indicated by colored counters across the map table. Tellers, seated in the gallery, selected and reported the plots to the appropriate Royal Air Force Fighter Group—also to Headquarters of the Observer Area—and to other services and observer operations rooms which might become involved with the aircraft being plotted.

War subjected the Observer Corps to searching tests. Its first came in 1940 with the Battle of Britain. Some modifications to methods were adopted during that battle to reduce time-lag inherent in a system involving the use of eyes, ears and speech. Also, aircraft recognition was added to the observers' duties. The Observer Corps' part proved vital to victory in that battle. In April, 1941, in recognition of its services, the late King George VI honored the Corps with a new title—the *Royal* Observer Corps.

As war progressed, important secondary functions were added to the Corps' primary task of tracking aircraft. Certain observer posts were equipped with radio sets or signal flares to aid lost or battle-damaged friendly aircraft to safe landings. Many Allied airmen owe their lives not only to the accurate tracking and identification by the Royal Observer Corps but also to prompt rescue work made possible by the pin-pointing of a crash.

In 1942, the Royal Observer Corps was again reorganized. Its Areas were made to coincide more accurately with those of the parent Royal Air Force Fighter Groups, and it was decided to employ women in operations rooms as well as on observation duty. This aroused controversy but proved successful. Additionally, training in procedure and methods was made compulsory, and graded ranks were introduced for all personnel though they retained civilian status.

An innovation in Royal Observer Corps' operations rooms at this time was the long-range plotting board. Tracks plotted by adjacent groups were becoming confused because of insufficient overlap of map tables: one group could not see quickly enough what was approaching from another. The problem was solved by introducing a second table on a smaller scale showing surrounding areas and displaying what was going on there.

The second great test of the Corps came when the enemy introduced "hit-and-run" raids across the Channel following the Battle of Britain. The enemy flew in low to avoid radar screens. The threat was met by establishing satellite observer posts along the coast to alert neighboring towns the instant an enemy was sighted. Local "short circuiting" in reporting brought instant information of impending attack to the defenses in that area. The scheme called for constant vigilance on the part of coastal observers, first-class visual recognition and quick, unfaltering action from all concerned.

The third big test came in 1944 with the threat of pilotless aircraft—the so-called "flying bomb." There was some doubt as to whether visual plotting would be any use if such an attack came. Under actual conditions, however, the value of human observers was again demonstrated. Their plotting "picture" was so complete that R.A.F. controllers were established in some operations rooms to direct their fighters entirely from the visual information plotted.

When the Allies invaded Europe, the Allied Air Commander invited observers trained in aircraft recognition to accompany the Expeditionary Force to Normandy to act as spotters in warships and transports. More than 1,000 observers volunteered, and some 800 selected for service helped to save many Allied aircraft from being shot down by Allied guns.

At the peak of its operational strength there were 1,400 R.O.C. posts watching Britain's skies day and night. About 40 operations rooms collected and distributed information supplied by the posts, and 30,000 men and women manned the organization. Their tasks were often carried out under attack.

Corps Is Modernized

Though the Corps is larger today than it was in 1939, its character is unchanged. It is still composed of volunteers bound by a fine team spirit, and with enthusiasm for its peace-time job of training. Observing and reporting procedures have been modified to meet changes brought about by faster aircraft and different tactics.

Training is now more comprehensive. It has three stages of proficiency: Primary, Intermediate and Master Test. A primary test is compulsory and for observers consists of naming 26 out of 30 types of aircraft, a written examination on Post organization and procedure, and demonstration of use of the Post sighting instrument. Operations room primary test includes a demonstration of plotting and a written examination on operations room practices and procedures.

Intermediate and Master Tests are voluntary but undertaken with enthusiasm. Each test calls for increased proficiency, the Master Test for observers requiring advanced aircraft recognition of 120 types and some knowledge of operations room procedure.

The reward for a 90 per cent pass of the Master Test is a "Spitfire" (a woven badge depicting a *Spitfire* aircraft, worn on both sleeves). Entrants for the Master Test average 8,000 or more annually and about 120 "Spitfires" are awarded. The test is held on a Sunday, the day most convenient for observers, some of whom travel long distances. Observers from the islands off the coast of Scotland, for example, have a journey of nearly two days to the rendezvous.

An important innovation in training is the Royal Air Force fighter station. Observers from all parts of Britain attend for one week. They meet and talk with the pilots whose missions they plot. Lectures are given by experts on air traffic control, meteorology, aircraft recognition, reporting, plotting, height-finding and so on. There are also technical and model exhibitions, film shows, firing on the range and flights in aircraft.

The camp's main object, however, is to engender team spirit. Observers live together under canvas, work and play together and exchange experiences of mutual interest.

Special Air Force blue uniforms were issued to the Corps in 1942. They are worn only when on duty or for special R.A.F. functions.

Recognition of individual service has been provided by establishment of the R.O.C. Long Service Medal awarded to observers with 12 or more years' service in the Corps. A list of new recipients appears monthly. A prized honor, in recognition of 25 years' service, was bestowed on the Corps on April 11, 1950, when the late King George VI assumed the title of Air Commodore-in-Chief of the Royal Observer Corps. END

★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★

DEVILISH JOB

You'll enjoy a chuckle over a true incident which involved a friend of mine when we girls were pushing 'em around for the R.A.F.

Martha was a valiant but unlucky British ferry pilot during the war and, being a bit sensitive due to a run of mishaps, planted herself wrathfully one morning before the Operations Officer with her assignment slip in hand.

The slip read: "Deliver Demon to Hell's Mouth."

"It's not funny," she wailed.

"Perfectly in order," observed Operations. "You are to ferry a Hawker *Demon* to Hell's Mouth Airdrome down in Wales. What's wrong with that?"

"Nothing," grinned the mollified Martha, "and at last I can claim I'm a devil of a pilot."

—J. P.
Ex-First Officer
British Air Transport Auxiliary

★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★

Rockets in the Arctic

(Continued from page 17)

little room for a SKYHOOK which measures well over 100 feet long when stretched out prior to inflation. After being filled with helium, the balloon was let up on a line until it was about 100 feet above the flight deck. At that time, the DEACON was attached and hung from its suspension at an angle of about seven degrees. The rocket was enclosed within a plastic covering to protect it against the Arctic cold during its long ride to the stratosphere. Then a firing switch was attached beneath the DEACON. With the SKYHOOK, DEACON, and firing switch checked, rechecked, and ready, the next and final step was the launching or release of the balloon and rocket assembly.

Launching required that the *Eastwind* create a no-wind condition by steaming downwind—that is, with the wind. This was necessary because the fully rigged balloons towered to immense heights and were easily blown about even by a slight wind. Steaming downwind during launching operations was made difficult by the restricted nature of the waters in which the *Eastwind* was operating; the water was covered with ice and dotted with icebergs. Wind, weather, and ice in many forms combined to form severe launching problems.

A waiting period followed the release of each balloon as it rose toward its ceiling altitude at a rate of less than one thousand feet per minute. When the SKYHOOK reached firing altitude, the launching switch was actuated and the DEACON took off to begin its climb to new and unexplored areas.

The cosmic ray information gathered by the DEACONs in their flights is highly significant. But the manner in which these flights were made is of much greater importance.

Previously, heights of 40 miles were attainable only by large complex rockets of the WAC CORPORAL, V-2, and AEROBEE types. Such rockets cost many thousands of dollars per unit and are often difficult to handle and launch. By contrast, the DEACON is a small, light-weight, and inexpensive rocket which is simple to handle and easy to fire.

The best way to conduct upper air research or high altitude cosmic ray studies is to make a number of rocket soundings at the same time at widely different locations and to make such soundings often. The cost incurred by the large rockets has so far made such extensive soundings impossible. Now, using balloons as launching platforms for small rockets, large scale simultaneous soundings are feasible at a reasonable price. This is one of the most significant developments in the 700-year history of rocketry. It is the beginning of a new chapter of man's conquest of the upper air.

(The opinions and assertions contained herein are the private ones of the writer and are not to be construed as official or as reflecting the views of the Navy Department or the naval establishment at large.)

Aeronautical Engineering

GOOD POSITIONS AWAIT TRAINED AERONAUTICAL ENGINEERS...

The new long range aircraft program has a place for you, in the wide field of Aeronautical Engineering. CAL-AERO TECHNICAL INSTITUTE will train you well for your Aviation Career.

LOCKHEED
— GUIDED MISSILE PROGRAM —
...an unusual career opportunity awaits an Aeronautical Dynamics Engineer at Lockheed in California . . . good understanding . . . and several years training and experience . . .
AERODYNAMICS (Performance)
Static and DYNAMIC STABILITY & CONTROL
THEORETICAL MECHANICS (Dynamics)
...THESE POSITIONS COMMAND A SALARY RANGE of $8,000 to $10,750
depending on your training & experience

copy from Lockheed trade paper help wanted ad.

NOTE—Cal-Aero Technical Institute is a subsidiary of Grand Central Aircraft Co.—world's largest maintenance and overhaul facility—now engaged in the giant B-47 Jet Bomber program. Cal-Aero carries foremost recommendations and approvals from military, governmental, educational sources and the Aircraft Industry. Cal-Aero engineering graduates are in heavy demand and in addition are qualified educationally for Officer Candidate Air Force and Naval Aviation Cadets.

APPROVED FOR VETERANS

AIRCRAFT INDUSTRY OFFICIALS PREDICT A GREAT SHORTAGE OF ENGINEERS and the situation will become more serious. There are fewer engineers—and enrollments in engineering schools are diminishing. 50,000 graduations in 1949 & 38,000 in 1950 have dropped to 26,000 in 1952, covering all phases of engineering in all fields. Students should consider engineering as a way of serving their country and at the same time preparing themselves for a career cram full of opportunities—In our scientific age there will be an ever increasing demand for engineers.

✔ **FRANK R. SEERY, NORTH HOLLYWOOD, CALIF.,** says: "employed in engineering 3 years . . . enrolled at Cal-Aero 1948, graduated 1950...immediately employed by consultant engineering firm, at salary considerably greater...than prior to my enrollment."

✔ **ROBERT A. OLSON, GLENDALE, CALIF.,** says: ..."3 months since I graduated from Cal-Aero...no previous engineering experience... well satisfied with my job... base pay is over $350.00 per month ...it's by no means tops as there are opportunities opening up."

CAL-AERO TECHNICAL INSTITUTE
GRAND CENTRAL AIR TERMINAL
GLENDALE 1, CALIFORNIA

MAIL THIS COUPON—TODAY!

CAL-AERO TECHNICAL INSTITUTE, Glendale 1, California
Please mail me information and free catalog immediately.

☐ AERONAUTICAL ENGINEERING
☐ MASTER AVIATION MECHANICS ☐ JET ENGINE MECHANICS
HOME STUDY COURSES
☐ Aeronautical Drafting ☐ Aircraft Blueprint Reading
☐ Stress Analysis and Design P-4

name ____ age ____
address ____
city ____ zone ____ state ____
High Sch. grad.—yes ☐ no ☐ veteran ☐ non-veteran ☐

Tuttle Report

(Continued from page 25)

frequency transmitter and receiver and a very high frequency outfit including an omni-range receiver, ILS and marker-beacon receiver, 8-channel VHF transmitter and tunable receiver), gyro compass, gyro horizon, turn and bank indicator, rate of climb indicator, and sensitive altimeter. Modified shoulder harnesses were installed in the two front seats, and the entire engine and airplane completely shielded to prevent radio interference.

I took advantage of every discount I could arrange. My investment as of Oct. 3, 1951, amounted to $3,128.54 for plane and equipment.

It was decided to use the standard company car allowance of 6½c per road mile, in charging the company for operation of the airplane, for the first year. This would provide a direct comparison between plane and car without having to make confusing allowances for cost differentials.

The system of using road miles, rather than air miles, was, again, largely to provide a direct comparison with car travel. For the most part, mileage figures were computed on an Esso road map. These could be easily checked, and would remain constant. The usual method of keeping records in air transportation is hourly operation, but this would vary from trip to trip, depending upon wind, route, weather and traffic conditions at busier air terminals, all this making cost comparisons difficult. Mileage differentials between road and air are actually not startling since procedures in entering and leaving the traffic pattern of every airport add five or 10 miles to each end of a straight line course between any two points.

A careful record was kept of all expenses involved in the purchase, maintenance and operation of this plane, from September 18, 1950, the date of my first trip in it, through September 17, 1951. These costs, less gas and oil, were:

Total capital investment (plane, equipment, etc.)	$3,128.54
Maintenance	358.22
Hangarage ($25 per month)	300.00
Insurance	258.62
	$4,045.38

In addition, I maintain current the following bulletins, aids, etc.:

Airman's Guide (a bi-weekly government bulletin listing current data on facilities, location, condition, etc., of all U.S. airports, also special regulations, etc.)	$ 6.00
Sectional charts (Air Maps covering eastern U.S.)	17.00
Radio Facility Charts	10.00
Daily U.S. Weather Maps	7.20
	$40.20

The insurance coverage carried on this plane consists of the following:

Bodily injury liability (excluding passengers)	$25,000 & $50,000
Property damage liability	$50,000
Passenger bodily injury liability	$10,000 & $30,000
Passenger medical payments	$500 each
All ground risks	$3,200 less $320 deduc.
Accidental death and/or dismemberment, covering self for all flying time, in own or any other plane, private or commercial	$20,000

From the standpoint of utility, the yearly totals show 70 business trips by plane, with only six from September 18, 1950, through the balance of that year. This was due to personal illness.

★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★

SCOOTER BOOSTER

A distinctive participant in the AOPA round-up at Rehoboth Beach, Delaware, was John Tyson of Royers Ford, Pa. As usual, Tyson flew in in his *Super Cub*, unloaded his 48-lb. Scooter Cub, and toured the area in style. He figures he's ridden the scooter close to 14,000 miles in all and has worn out two sets of tires.

★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★

Complete records were kept on each trip and a comparison with auto travel for each trip maintained. These comparisons involve a running account, by trip, of the savings in my time effected through use of the plane versus a car, the savings in hotel bills, and in meals.

For the sake of easy figuring, I am computing the value of my time saved on the basis of $30 per day, the average hotel bill at $4 and the average meal at $1.50. On this basis, these savings total for the year:

My time: 42 days, less 1½ days total time lost to weather (@ $30.00)	$1,215.00
Hotel: 37 (@ $4.00)	148.00
Meals: 130 (@ $1.50)	195.00
Total savings to company on me alone	$1,558.00

In addition, I took along one passenger on 36 of these trips, and two passengers on five trips. These were company personnel, traveling at no cost to the company, and with savings in time, hotel and meals, similar to those listed for myself. I have not considered this saving in my study, confining it to myself, but the obvious saving to the company is evident.

Another value has been derived from the use of this plane. I do not know how to put a monetary value on it, but it may be quite substantial. I refer to the service "plus" which it has been possible to render our customers. I am thinking of one occasion when Nashua Corp. at Nashua, N. H., was faced with a crisis very important to them. I was at Riegel Paper Co. in Milford, N. J., where I had flown. At about 2 p.m., Nashua reached me by phone at Riegel's plant, and asked me to come as soon as possible with necessary inks to help them out. I flew Bob Helman to Morristown where he had left his car, then flew to Teterboro where Kaupp met me with 200 to 300 pounds of inks, and reached Nashua at about 6:30 p.m. We planned our work for the coming day and I was able to leave them the next afternoon in a happy frame of mind after satisfactory runs through the day.

Later, Nashua Corp. again asked whether I would come right up. I explained that I would if imperative. Ralph Rieves' call reached me at 3 p.m. Kaupp had inks made and at Teterboro by 5 p.m., so that I was able to leave there by 5:30, arriving in Nashua, N. H., by 7:15 the same evening. By the end of the following day, they were able to plan their schedule on a large run.

On another occasion, a customer phoned to say he was in trouble on a large job. If we could not get him out of it fast, he would call in our competitors. I flew to his plant the same afternoon to look into the problem. Together we solved it pronto.

I do not know what the value of such trips may be to our company, or to our customers, but I am sure they have value and should be considered as plus factors in evaluating the airplane. The time saved through its used permitted the equivalent of 40 similar trips during 1950-51 . . . trips impossible during the previous year.

I have found customers, without exception, interested in the plane and its utility. It instills respect for the company, which they feel must be equally progressive in other ways. I have given several customers their first airplane ride and several others have asked for a ride and are looking forward to it.

The balance of the totals kept in my record are:

Number of trips	70
Total travelling time (hours)	187:20
Total road miles flown (based on Esso road map)	21,846
Total cost to company (based on auto mileage rate of .065 per road mile)	$1,420.99
Total expense for gas & oil	$ 529.29
Total delays due to weather	3
Total time lost due to weather delays*	1½ days

* By way of explaining the last factor, that of weather, one delay occurred at the end of a working week, and caused no loss of company time, while the other two caused ½ day each. However, on three additional occasions, I changed my plans, due to weather conditions, and did not leave.

I have added a half day total for this.

Actually, I have found the weather to be a minor factor, but an annoying one, because the possibility of weather delay is always present. Hence, with the company's blessing, I plan to begin instrument training shortly, with expectation that this will very nearly eliminate weather as a factor in airplane utilization.

I have found the airplane to be as safe as the pilot makes it, and certainly safer than present auto travel.

I have found rain no real hazard at all, so long as it does not cause visibility to drop below safe minimums. Snow is in the same general class, with the exception that it generally causes poorer visibility conditions than rain. Sleet, wet snow or freezing rain are all to be scrupulously avoided. Thunderstorms can usually be circumnavigated easily and with no danger or discomfort, since they are usually scattered. When they occur as a general condition over a large area and cannot be readily avoided, the plane should be left in the hangar.

If an airplane such as mine is stored overnight under cover in a hangar, the charge usually varies from $1 to $2.50. I have never paid more than $2.50 and the average charge is between $1.50 and $2. If a plane is simply tied down outside overnight, there is, in most cases, no charge at all.

Regarding transportation from an airport to the hotel area of the city, I find limousine services only too happy to pick up additional passengers at the commercial hangars and transport them to town at the usual airline rates.

On some occasions, it is possible for a small plane to land much nearer the center of town than can the airlines, and in such cases regular taxi fare to the hotel and/or business districts is frequently less than airline limousine fare to the commercial airports.

I have never been in trouble or in danger in the air, and I have had no accidents of any kind in connection with my use of the airplane, unless you count the time Charlie Jackson fell from a collapsible chair in a hangar at Atlanta.

During this same year, my car was demolished on the Pulaski Skyway and I myself narrowly escaped serious injury.

I have found my plane a fast, safe and mobile means of transportation.

Each possible application of personal airplane transportation must be evaluated on an individual basis. It appears from my own experience that there probably are other places involving other individuals within the company where such transportation might be adopted to the advantage of both the company and the individuals. A realistic study of such situations may well be in order.

For the initial steps in my experiment I started with the equivalent of a used Crosley car, to which I have added airline equipment. I now would like to move that equipment into something more nearly comparable to a Dodge or an Oldsmobile.

My initial cost for flying instruction was about $500. It will probably cost another $500 for training necessary to obtain an instrument rating. It is my thought that if war should come an instrument rating may be required for continued business use of a personal airplane.

The total cost of this plane to me during the past year, including maintenance, hangarage, insurance, operation (gas and oil) and technical, navigational and operational aids, was $1,486.33. My total personal outlay to date, including instruction plus the airplane and equipment as well as the foregoing, has been $5,114.87. The total which I have charged to the company, at the auto charge rate of 6½c per road mile, is $1,420.99.

This means that, for the year, I am some $65 short of recovering my yearly costs, with no reduction of principal. The dollar savings accruing to the company due to my operation of this airplane total $1,558 on my hotels, meals and working days, plus additional dollar savings for other company personnel so transported, plus intangible savings due to increased accomplishment.

It would be desirable, of course, if the company would furnish and pay for the maintenance and operation of an airplane for my business use. I realize there may be no precedent for this within our own organization, but there are points in its favor. For instance, the company can better stand the burden of the financial investment than can an individual. Furthermore, the investment is actually less for the company than for an individual since the tax situation will allow the government to share in such an item of business expense.

Another important point is that the company is the chief beneficiary of my use of an airplane. It is true that it permits me to be home more, as well as away more, but my total *personal* use of this airplane to date was a 20-minute ride I gave my children, plus a week-end when I took Jackson from Columbus, Ga., to Miami, Fla., and back to Palatka, Fla., on a Saturday afternoon and Sunday. Such an arrangement would also permit the company to keep its own records of the cost of the airplane, its value, etc.

One additional reason why the company should assume this expense is that I feel the item should not properly be charged to my personal expense account. In the sense that it adds an extra two months to my useful working year, should it not be considered in the same light as an assistant, or as an item of efficient office equipment?

An alternate suggestion would involve a rate change, for airplane use. I have given this considerable thought and suggest the following:

Basic rate, per road mile	$0.10
Plus per passenger carried	.02
Plus per 100 lbs. material carried	.01

Incidentally, although only total cost, time, mileage, and savings figures are given herein, complete detailed figures covering each trip are available for your inspection at any time.

Respectfully submitted,

Douglas E. Tuttle

(The Second Annual Report of Mr. Tuttle will appear in the May issue of FLYING.) END

At every airport in America, you'll see young men standing outside the fences, watching the planes come and go; watching the busy hum of the activity of servicing and repair. Are you one who only watches when you could be an important part of these activities?

SPARTAN trains you quickly and thoroughly to become an important part of this most rapidly developing and expanding of all industries. Don't let the thought of possible Service to your country stop you from getting the training you need, right now! You will advance faster, in the Service, with this training and when you are out you will have both Service and SPARTAN training to help you to build a successful career. In addition you will have at least two years seniority with your company over those who start training after leaving the Service. *Get ahead faster with Spartan training.*

No Correspondence Courses

SPARTAN

A UNIVERSITY OF AVIATION

SCHOOL of AERONAUTICS — COLLEGE of ENGINEERING

TULSA, OKLAHOMA

MARK AND MAIL NOW

Maxwell W. Balfour, Director
Spartan School of Aeronautics Dept. F-43
Tulsa, Oklahoma

Please send your free Catalog immediately.

Name _____ Age _____

Address _____

City _____ State _____

Indicate which of these branches interests you.

☐ Flight ☐ Instruments ☐ Crop Dusting
☐ Mechanics ☐ Aeronautical Engineering
☐ Radio ☐ Airline Maintenance Engineering
☐ Meteorology ☐ Flight Engineer

Spartan is approved for training under the G. I. Bill of Rights

FLYING FARMERS

By BILL RENSHAW

FF CLINIC

Give them an attractive and inspiring program and Flying Farmers will "burst the seams" of almost any hall, regardless of weather.

This fact was well demonstrated at the seventh mid-winter Clinic, held this year at Purdue University.

Outstanding features of the program were three panels by the distaff section of the organization (these will be reported in a forthcoming issue of FLYING).

With ceiling and visibility "below the deck," some 350 FF's slid and skidded many, many miles to hear Gill Robb Wilson present a ringing challenge for grassroot leadership.

Addressing a ball room packed with Flying Farmers, the Editor and Publisher of FLYING, urged those assembled to help build a people so strong that none will dare molest them.

* * *

JUNIOR PROMOTER

A real bell ringer at the Clinic of Illinois and Indiana Flying Farmers was the Junior Flying Farmer Award made to nine-year-old Terill Misner of Madison County, Ind.

Terill, who pilots her dad's Piper with skill and finesse, talked flying so enthusiastically to her class that all 39 of her classmates said "yes."

Dad and Mother took up where Terill left off, and on a beautiful Sabbath all the boys and girls in her class got a flight that will create pilots tomorrow.

* * *

MOTHER OF THE YEAR

Flying Farmers of Indiana and Illinois believe their Flying Farmer Mother of the Year Award will sell a lot of aviation to women folk of the area. The award, based on the following score card written by Flying Farmers, is sponsored by TWA.

Rules:

1. Must be a mother;
2. Must be the wife of a Flying Farmer;
3. Must not in any manner sponsor or promote her own candidacy;
4. FF women recognized by other state awards are not eligible for mother of the year competition.

Nominees were graded as follows:

1. Good motherhood 1% to 25%
2. Community participation, such as 4-H leader, women organizations, PTA, etc. 1% to 10%
3. Participation in church and religious activities 1% to 15%
4. Interest and work in government 1% to 10%
5. General contribution to agriculture and aviation 1% to 20%
6. Personality, grooming and general appearance 1% to 10%
7. FF mothers with license to fly awarded an automatic 5%
8. Mothers with a son or daughter licensed to fly also awarded an additional automatic 5%

First to receive the awards were Mrs. Bessie Hagerty of White County, Ind., and Mrs. Floyd Miller of Dewitt County, Ill.

Under the plan, mothers who are nominated are not to be interviewed by judges. Creators of the plan feel that this is a high level award and that any questioning of nominees, as is done in some instances, would detract from the dignity of such an award.

FF officers in both Illinois and Indiana feel that every effort should be made to keep FF mothers from knowing they have been nominated.

Award rules do allow judges to interview those who do the nominating.

* * *

FF HEADQUARTERS

In spite of the fact that many midwesterners think of Wichita as Indian country, they will contribute generously to the building of a Flying Farmer headquarters at that aviation center.

Pledges now being made are expected to average about $25 per Flying Farmer, according to officers of the Illinois and Indiana "Wings."

Work on the building will start in the spring.

The schedule calls for it to be finished in time for the National Convention scheduled for Wichita this fall.

Some midwestern Flying Farmers as well as many living farther east, think the national headquarters should have been established closer to the center of population. They fear domination by a few. Many others however argue "We're getting better leadership. Let's give it another try." They pray that a National Convention may never again be allowed to get out of hand like the 1952 event did for a brief period.

More than 75 per cent of midwest FF's contacted recently felt the National Association officers acted with rare wisdom when they rejected the proposal that the new headquarters be built by a few well-heeled Santa's. They agreed that the participation of many "little fellows" was highly desirable. And that is the way it will be.

* * *

FIELD DAY AHEAD

There'll be big doings on the "banks of the Wabash," come the first Monday in August. On that day Flying Farmers of Illinois, Indiana and neighboring states will return to Purdue University, scene of their first field day seven years ago.

Flying Farmers of the area think of that first field day as a memorable one when without trying they set an unofficial civilian record when 470 airplanes were put in the air in 70 minutes.

In the interest of safety there will be no attempt to break that record.

This year Purdue, the State Department of Aeronautics, Flying Farmers and many other agencies will plan to handle 1,000 planes, a sizeable load for any airport. Neither lights nor radio will be used except in emergencies.

In seven field days held thus far this group of Flying Farmers have averaged 594 airplanes in and out per field day, without the slightest accident.

The plan which was worked out by FF's and Grove Webster, director of Aeronautics at Purdue, in 1946, is simple and safe and it gets planes on the ground in a hurry. This plan will be given in detail in a forthcoming issue of FLYING.

* * *

MICHIGAN STRIP

They are now up "to snuff" at Michigan State College, thanks to Flying Farmers and progressive leadership on the part of College officials. For years it has been impossible for Flying Farmers to fly to MSC for the many yearly agricultural events staged there. Reason—no nearby strips and Lansing Municipal so far away that flying-in just wasn't practical.

Michigan Flying Farmers have argued that a strip at this, the first Land Grant College, was a necessity. To this, College officialdom agreed, but asked "how?" With typical Flying Farmer generosity the answer was: "We'll build the strip with our own earth moving equipment."

The strip, when levelled and packed, should give MSC agronomists a chance to run some revealing tests on how to develop a turf (sod) that can be flown off the year round.

Lee Talladay, a Michigan FF and vice president of the National Flying Farmer Association, says, "We told MSC officials we needed this strip—let's use it."

FLYING FARMER CLINIC

Ralph Young, Ohio aviation leader, congratulates an Indiana family on being 100 per cent air-minded. The family is made up of nine-year-old Terill Misner, winner of the first Junior Flying Farmer of the Year Award, and her Flying Farmer parents.

Flying Farmer of the Year Award went to Elmer Pattison (left), president of the Illinois Flying Farmers. When he recently lost a hand in a cornpicker, Pattison's first concern was: "Will I ever be able to fly again?" Assured that he would, Pattison took his injury in stride. First to congratulate him on the award was Gill Robb Wilson (right), editor and publisher of FLYING, who addressed the FF Clinic.

Many were the nods of approval when Mrs. Bessie Hagerty was named Indiana Flying Farmer Mother of the Year at the Purdue Clinic. The award, made by Trans World Airlines, was presented by TWA's Warren Martin. A similar award was made in Illinois.

Another NORTHROP Graduate Chooses Jet Engine Career

Like many other graduates of Northrop Aeronautical Institute, Keith Englebart chose the fascinating field of jet engines for his career. He's moving ahead rapidly, thanks to his thorough, practical training at NAI. He has already won recognition for his part in setting up a new type of test stand for jet engine fuel systems. At this stage in his promising career, Keith supervises intricate jet fuel-system testing for his company.

NORTHROP Can Help You to Aviation Success!

It's the man with knowledge and training who gets *rapid promotion*—the big share of *important work*. Lack of training, so vital for today's rapidly changing aviation science, can penalize your chance for success! NORTHROP AERONAUTICAL INSTITUTE gives you the background you need—helps you make the most of every opportunity!

Your NORTHROP Diploma— A Passport to Opportunity!

NORTHROP graduates are sought by concerns throughout the aviation industry. The demand is so great, NORTHROP *graduates are offered their choice of interesting, exciting, profitable jobs PRIOR TO GRADUATION!*

Begin Your Aviation Career at NORTHROP!

NORTHROP AERONAUTICAL INSTITUTE is an accredited technical institute open to public enrollment. It is operated independently as a division of Northrop Aircraft, Inc.—a company renowned for advanced aeronautical design and development. NAI's up-to-the-minute courses in AERONAUTICAL ENGINEERING and AIRCRAFT & ENGINE MECHANICS reflect the advantages of this close association. Write *today* for complete enrollment information and a fully illustrated catalog showing NORTHROP training facilities. *There is no obligation!*

ATTENTION KOREA VETERANS — Northrop Aeronautical Institute is fully approved for your training and for all other veteran training.

Northrop
Aeronautical Institute
1519 E. Broadway, Hawthorne
Los Angeles County, Calif.

WRITE TODAY FOR FULL INFORMATION

NORTHROP AERONAUTICAL INSTITUTE 5016
1519 E. Broadway, Hawthorne, Los Angeles County, Calif.

Please send me immediately the Northrop catalog, employment data, and schedule of starting dates of classes. I am interested in:
☐ Aeronautical Engineering ★ Aircraft & Engine Mechanics ☐

Name _____ Age ____
Address _____
City _____ Zone ____ State _____
VETERANS: ☐ Check here for Special Veteran Training Information

GENUINE
NAVY INTER-MEDIATE PILOT JACKET
SPECIAL!
$32.50

—FOR A LIMITED TIME ONLY. Shipped postpaid if remittance accompanies order.
U.S.N. ISSUE
Brand new. Genuine dark brown Goatskin leather with zippered front. Bi-swing back, two patch pockets, one inside snap pocket, Mouton fur collar, Celanese lined. 100% wool cuffs and waist band.
FINEST JACKET MADE
Sizes 34 to 50—State Size Wanted
FLYING EQUIPMENT SALES CO.
Dept. F
1639-45 W. Wolfram St. Chicago, Ill.

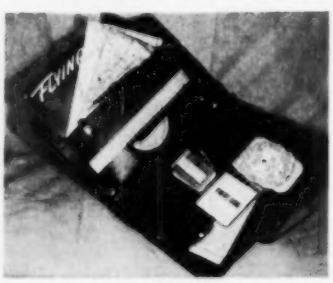
60 POWER TELESCOPE $3.95
VARIABLE EYEPIECE 20x40x60—BRASS BOUND
NEW! Three telescopes in one. 3 different magnifications. 20 power for ultra-bright images with 40 and 60 power for extra long range. Guaranteed to bring distant objects, people, sports events, ships, moon, stars, etc., 60 times as close.

Most powerful for anywhere near the money. 5 Sections. Closes to 1 ft. long. Contains 4 ground and polished lenses. Also used as a powerful compound microscope. Directions included. Mass production enables us to offer this instrument at amazing price of $3.95 complete. Ready for immediate use. We pay postage. Get yours NOW.
CRITERION CO. 331 Church St.
Dept. FS-7 Hartford 3, Conn.

ENGINEERING DEGREE IN 27 MONTHS
INDIANA TECHNICAL COLLEGE
B.S. DEGREE. Aeronautical, Chemical, Civil, Electrical, Mechanical and Radio Engineering (inc. TV and Electronics). Drafting. 1-yr. Gov't approved for G.I.'s. Low rate. Earn board. Large industrial center. Students from 48 states, 21 countries. Demand for graduates. Enter June, Sept., Dec., March. Write for catalog. 124 E. Washington Blvd., Fort Wayne 2, Indiana.

High Power BINOCULARS
FREE 14-PAGE BOOK & CHART

$9.95 up
Know the facts! Learn meaning of Power, Field, Coating. Latest data. 33 Models sold on
30 DAY FREE TRIAL
How To Select BINOCULARS
BUSHNELL'S, FL64, Bushnell Bldg., Pasadena, Calif.

COLES "CO-PILOT" PILOT'S CASE

Handsome Genuine Cowhide
Fully Leather Fitted 16"x12"
A specially compartmented Pilot's Case designed by an active Pilot to conveniently hold all essential flight gear—Aeronautical Charts—Any Standard Computor and Protractor—Sun Glasses—Credit Cards—Licenses—Log Books—Pencils—additional space for Instrument Charts, Toilet Articles, etc. Custom clips hold chart flat in flight.
CASE (unfitted) ($15.00 value) $11.95
COMBINATION OFFERS
A. CASE with MAGIC MILEAGE PENCIL* and WEEMS PLOTTER ($18.95 value) ONLY $15.25
B. CASE with MAGIC MILEAGE PENCIL* ($16.95 value) ONLY $13.50
*MAGIC MILEAGE PENCIL
Handsome automatic measuring device permits pilot to measure up to 280 miles accurately, or bearings, simply by rolling head of pencil across chart. Distances recorded directly on barrel and head. Write for folders. $1.95
Fully postpaid (USA) Prices include Fed. Excise Taxes
SATISFACTION GUARANTEED.
COLES AVIATION ACCESSORIES
P.O. Box 1677 G.C.S. New York 17, N.Y.

Private Flyer In Sweden

(Continued from page 29)

cruise of about 150 mph. They say it also performs well on floats, an important consideration in this land of lakes.

Oddly enough, there weren't many *Safirs* flying. The club, for example, had all American equipment: an Ercoupe, which I flew, and several Cessnas, the latter on skis. The reason for this, I think, is that when the equipment was acquired, right after the war, American airplanes were easier to purchase. During the war, the clubs accumulated a lot of money from Government contracts. They towed targets, maintained light surveillance, and made tracking runs for the AAA. They were paid for this and used the money to buy new planes. Most of the money is gone now, however, and new equipment again has become hard to pay for.

Amphibians Favored

Sweden is the largest of the Scandinavian countries. This in part explains the popularity of the airplane here. There are a number of airfields, but not enough to please the average private pilot who doesn't want to fly half way across the country whenever he goes somewhere. A lack of airfields is not much of a handicap, however, because the many lakes go a long way toward solving the landing area problem. The lakes are made to serve in winter, as in summer, by exchanging floats for skis. The lakes also lead to a preference for amphibians.

Flying out over Lake Malaren, Gunnar had assured me that the ice would hold us and that it would be feasible to make a forced landing anywhere. That is always a comforting thought to me, and I relaxed to enjoy the scenery. Before long, we flew over a ship cleaving its way through the ice and leaving a curving line in its wake before the ice closed in behind it.

"Hey," I said to Gunnar, "thought you said we could land on that stuff. It's so thin that ship is plowing right through."

"We can land on it," he laughingly reassured me. "It's that thick." He held the palm of one hand over the other so they were about a foot apart. "It will easily support our weight, right up to the edge."

We didn't try it, but of course he was right. That Lake Malaren is the biggest airfield I've ever seen.

I had been told that navigation in Sweden would be a cinch because of the many lakes, each with its characteristic shape. That sounded reasonable and, on the chart, the lakes looked to be plentiful and perfect land marks. The whole idea proved disappointing, however, when I got in the air. You can have too much, even of a good thing. Like every other feature useful as a landmark, too many lakes only proved to be confusing. Besides, I found everything frozen over and that made the outline of the lakes hard to trace.

Except in the south, which looks very much like the open country of Denmark, the terrain of Sweden is, for the most part, densely wooded. Taking off from Bromma you are over the forests almost as soon as you cross the airport boundary. Even over Stockholm, the impression is still one of forests. This beautiful northern city seems to have sprung up amidst lake, island and forest. What is more, it is living at peace with the gifts of nature. Most cities slash into the natural landscape to clear, pave and scar the area necessary for the busy life of a city. This is not the case with Stockholm. The buildings blend with the trees and water so that the beauty of each adorns the other. No other city has quite the same atmosphere.

Camera Shy

Unhappily, I was not permitted to take photographs from the air. Air photography is forbidden except with a license, something not usually available to foreigners. This is all part of the precautions deemed necessary by this country which, though neutral in the cold war, is situated in a danger zone. I have already mentioned the security guard at the airport. As you might expect, other precautions include the establishment of numerous restricted areas. These inconveniences are minor and appear to be the minimum necessary. They in no way detract from the pleasure of flying in this delightful country.

Familiar airplanes are not the only things that make an American feel at home on a Swedish airport. Equipment is maintained to the highest standards. Air charts are excellent. Radios are the rule, and the tower can answer in English. Rental rates are reasonable, too.

No matter where your interests lie, there are a wide variety of flights to be enjoyed in Sweden. The fisherman can get on floats and go in almost any direction. Local flights around Stockholm are extremely interesting and should include Drottningholm, a royal palace dating from the 17th century, and Gripsholm, a famous old castle on Lake Malaren. For longer cross countries, the flight from Stockholm to Gothenburg (250 miles), will enable you to see the best of Sweden. One to Malmo (317 miles from Stockholm) will put you within minutes of Denmark's Copenhagen. Oslo, in Norway is only 259 miles.

If you visit Sweden, don't miss the chance to look at it from the air. END

RED HOT NEWS

(Ed. note—Data here presented comes from patriots behind the Curtain. They know aviation and are reliable. However, they work under great stress, and possibility of error must always be considered. Data is original. Some items must be withheld for pertinent reasons.)

GERMAN "SIERRA WAVE"

The BICh(a)-22, an experimental sailplane, has been seen flying around Gotha, East Germany. Rumor among German ex-glider pilots has it that the Russians have discovered a weather phenomenon similar to the Sierra "standing wave" in the U.S. The Russian glider is fully instrumented and carries out frequent flights.

CRACKING CONCRETE

Reports of the inferior quality of Russian concrete persist in filtering out of the USSR. Our last one comes from Vunkovo airfield near Moscow, where flight activities have been suspended due to cracking and sagging of the runways.

WONDER GUNSIGHT

A Soviet pilot officer provided the first confirmation of earlier rumors about an electronic gunsight that fires the guns automatically. The Russian, stationed in East Germany, accidentally mentioned the fully automatic device while under the influence of alcohol and was immediately placed under arrest by a fellow officer. The German operative who passed this information speculated as to a possibility of Russians now having a version of the German automatic gunsight, the EZ-42. The only details of the EZ-42 ever disclosed were the full automaticity and weight—about 30 pounds. The data of the mysterious device were either lost or perhaps pilfered by the Russians.

AIR TRAVEL

Although the Polish airline LOT maintains scheduled routes between a score of larger towns in Poland and abroad, the citizens prefer to go by rail. Apart from red tape in obtaining reservations, airline passengers are required to arrive at the airport two and a half hours before departure time. Uniformed police and plainclothesmen search the passengers and their baggage, check their documents as well as the reason for traveling. Assuming that all goes well, passengers spend about five hours for search and checking procedure before departure and after arrival at destination, which is two hours more than flying time between the furthermost airports in Poland.

RED BONER

All magazines and newspapers this side of the curtain are read and cross-filed by the Russian Intelligence for later analysis and possible use in their internal propaganda. A recently issued Red Air Force circular ridiculed American ignorance of modern aircraft engineering thus: "One of the American leading aviation journals, The Flying Magazine, published an article in which the author laughed at our order prohibiting engine warming up before take off. The stupidity of the capitalist writer is indeed unbelievable—he should know that jet engines need no warming up, but can be operated at full throttle immediately after starting. If the capitalist countries want to waste their fuel, we should take it as a lesson and observe the take-off routine as outlined in the special order of November 14, 1950."

The order in question did refer to fuel waste and fuel saving practices. It mentioned jet take-off procedure but it also *did* specify that "the throttles should be opened only once to clear the spark plugs." It read further that "propellers and magnetoes can be satisfactorily checked after take-off."

Patently the author of the Red Air Force circular did not agree with the order prohibiting warm up of piston engines and took this method to dig at a bad technical order which he did not dare to disagree with officially.

NEW LANDING TECHNIQUES

Gear-less landing trials with a small catapulted fighter of unknown designation have been conducted in Kimry. The fighter, resembling the Me 163 German rocket interceptor, landed on a canvas strip about 30 feet wide and 200 feet long. The strip was suspended from metal poles and formed a flexible airborne up-hill runway on which the fighter "bellied in." The height of the supporting poles progressed from about four feet at the begining of the strip to about 20 at its end. The aircraft after landing on the canvas strip skidded to a stop within 100 feet. The entire strip structure is portable and was seen erected within an hour.

AIR TAXI

Polish Airlines LOT have inaugurated an air taxi service to accommodate communities with airfields too small for the regular Il-12 airliners.

A PARKS EDUCATION MEANS THIS TO YOU

You will be prepared for a job in aviation . . . a field that pays 90% of its executives $5000 per year and more compared to only 80% earning this salary in other fields.

You will receive a B.S. Degree from Saint Louis University. With a degree you will earn 50 to 100% more than executives without a degree.

You will enter aviation with the prestige of an education from PARKS . . . America's first aeronautical college. You will advance faster . . . earn more . . . in less time.

Write for information on:
Aeronautical Administration
Aircraft Maintenance Engineering
Aeronautical Engineering

Flight Courses—For Private, Commercial, Instrument, Flight Instructor, and Multi-Engine Ratings.
(All schooling at Parks approved for G.I. training.)

Enter Air Force ROTC to complete schooling without interruption.

PARKS COLLEGE, Dept. 1033
East St. Louis, Ill.
I am interested in:
☐ Aeronautical Administration
☐ Aeronautical Engineering
☐ Aircraft Maintenance Engineering
☐ Aeronautical Meteorology
☐ Flight Courses
☐ G.I. Training
Name..... Age.....
Address..... Zone.....
City..... State.....

PARKS COLLEGE
OF SAINT LOUIS UNIVERSITY
DEPT. 1033 • EAST ST. LOUIS, ILL.

Which of these WEEMS navigation instruments and aids do you need?

Navigation" musts" for pilot and student alike include WEEMS MARK II PLOTTER—standard for years with air forces. Scale fits Sectional and World Air Charts. Statute miles. Only $2.00; NEW WEEMS MARK II-N PLOTTER—differs from Mark II Plotter in that distance scales give nautical miles on Sectional and World Air Charts. Only $2.50; DALTON E-6B COMPUTER—two sides. One for computations, other for vector problems. Only $10.00; DALTON MARK VII COMPUTER—solves same problems as E-6B Computer, plus air speed calibration chart and flight log. Only $5.00.

Free Weems Catalog describes these, as well as many other essential navigation aids and instruments including the latest navigation books. Also tells you about the WEEMS AIR NAVIGATION SCHOOL established since 1927. Send for free Catalog today—or see your Aviation Supply Dealer . . . Address Department 5.

WEEMS SYSTEM OF NAVIGATION
ANNAPOLIS • MARYLAND

Lightplane World Records

(Continued from page 33)

temperature was 22 below. My full throttle rpm's were down to 2,375 and the slightest turn or movement of the elevator caused me to lose altitude. Hoping for 26,000, I just held a straight course and constant airspeed and it came a foot at a time. When I was fairly sure I had a good 26,000 I started down. I was only down to 22,000 when my oxygen ran out so I pointed the nose at Belle Isle and dived to 18,000 where I could get some breathing air.

Thirty minutes later I was back at the seaplane base and Col. Leavell shut off the barograph. On December 8 we got the okay from Paris. An altitude record of 26,226 feet had been officially accepted.

During the war I flew well above 30,000 feet in B-29's, but with several thousand horses working and a pressurized cabin it seemed very tame. For a thrill, I recommend trying to get the last foot of altitude out of a light seaplane, where 25 rpm's mean the difference between holding or losing altitude.

One word of caution: be sure you have the proper altitude equipment. Although I've gone to 20,000 feet before using oxygen, I do not recommend this practice. END

WORLD'S FINEST COMPUTERS
INDISPENSABLE FOR PILOTS AND NAVIGATORS
The only modern computer. Solves ALL navigation problems in a simple way without limitations in speed or wind speed. Single hand operation. No depicting triangles, no pencil work required. Gives correct air speed, correction of heading for wind, drift, radius of action, pressure pattern wind and drift, Mach Number, etc., etc. All metal, precision machined, with sharply defined scaled, electro-chemically penetrated. Lasts a lifetime. Thousands sold.
B-23 Pocket Size, 4⅝" dia. $15.00
B-24 Shirt Pocket Size, 3" dia. 15.00
All with carrying case and instruction booklets, a complete novice can use it.
BATORI COMPUTER COMPANY, INC.
Box 63, Grand Central Station, New York, N. Y.

FLEX-O-PROP
A SELF PITCH ADJUSTING PROPELLER PROVEN SUPERIOR PERFORMANCE AT LOW COST
Approved for all Aircraft up to 125 HP
write to
MUNK AERO. LAB., INC., Brentwood, Md.

FREE! CATALOG of WATCHES and CHRONOGRAPHS

12 Hour recorders, split second timers, stop watches, aircraft instrument watches, multi-purpose watches at reduced prices. Send postcard today to Dept. F
WHITE PLAINS WATCH CO., INC.
River Park 17C, White Plains, N. Y.

DART AIRCRAFT
Write for Folder
PEARLAND, TEXAS

LIGHTPLANE WORLD RECORDS

(All speed records are in a closed circuit)

CLASS C-1.a

First Category: Aircraft weighing less than 1,102.3 lbs.

DISTANCE IN A CLOSED CIRCUIT WITHOUT REFUELING	1,242.74 miles	
Albert Revillon, France		May 10, 1952
AIRLINE DISTANCE	1,361.485 miles	
Robert C. Faris, U. S.		Aug. 9, 1952
ALTITUDE	27,152 feet	
Mrs. Ana L. Branger, Venezuela		April 20, 1951
SPEED FOR 100 km. (62.137 miles)	126.223 m.p.h.	
A. L. Cole, Great Britain		June 17, 1950
SPEED FOR 500 km. (310.685 miles)	115.611 m.p.h.	
Albert Revillon, France		May 10, 1952
SPEED FOR 1,000 km. (621.369 miles)	115.442 m.p.h.	
Albert Revillon, France		May 10, 1952
SPEED FOR 2,000 km. (1,242.74 miles)	113.979 m.p.h.	
Albert Revillon, France		

CLASS C-1.b

Second Category: Aircraft with total weight between 1,102.3 and 2,204.6 lbs.

DISTANCE IN A CLOSED CIRCUIT, WITHOUT REFUELING	1,553.425 miles	
Robert Goemans, Belgium		Aug. 12, 1952
AIRLINE DISTANCE	2,462.330 miles	
Maximillian A. Conrad, U. S.		April 30, 1952
ALTITUDE	30,203 feet	
Miss Caro Bayley, U. S.		Jan. 4, 1951
SPEED FOR 100 km. (62.137 miles)	192.839 m.p.h.	
R. R. Paine, Great Britain		June 17, 1950
SPEED FOR 500 km. (310.685 miles)	164.231 m.p.h.	
Miss Marie Nicolas, France		Dec. 5, 1951
SPEED FOR 1,000 km. (621.369 miles)	163.287 m.p.h.	
Miss Marie Nicolas, France		Dec. 5, 1951
SPEED FOR 2,000 km. (1,242.74 miles)	142.058 m.p.h.	
Joseph G. Garnier, France		April 23, 1952

CLASS C-1.c

Third Category: Aircraft with total weight between 2,204.6 and 3,858 lbs.

AIRLINE DISTANCE	4,957.240 miles	
William P. Odom, U. S.		Mar. 7-8, 1949
ALTITUDE	(None Established)	
SPEED FOR 100 km. (62.137 miles)	222.846 m.p.h.	
Leonardo Bonzi, Italy		Dec. 21, 1951
SPEED FOR 500 km. (310.685 miles)	156.475 m.p.h.	
Nikolai Kouznetzov, U.S.S.R.		Oct. 11, 1951
SPEED FOR 1,000 km. (621.369 miles)	216.114 m.p.h.	
Leonardo Bonzi, Italy		Dec. 21, 1951
SPEED FOR 2,000 km. (1,242.739 miles)	158.932 m.p.h.	
Paul Burniat, Belgium		June 8, 1952

CLASS C-2.a

First Category: Light seaplanes weighing less than 1,322.8 lbs.

ALTITUDE	24,498 feet	
Charles L. Davis, U. S.		June 18, 1952
SPEED FOR 100 km. (62.137 miles)	108.806 m.p.h.	
Charles L. Davis, U. S.		Aug. 29, 1952
SPEED FOR 500 km. (310.137 miles)	105.354 m.p.h.	
Charles L. Davis, U. S.		Aug. 29, 1952
SPEED FOR 1,000 km. (621.359 miles)	(None Established)	
SPEED FOR 2,000 km. (1,242.739 miles)	(None Established)	

CLASS C-2.b

Second Category: Light seaplanes with total weight between 1,322.8 and 2,645.6 lbs.

ALTITUDE	26,266 feet	
Charles L. Davis, U. S.		Oct. 18, 1952
AIRLINE DISTANCE	946.732 miles	
Harold E. Mistele, U. S.		June 12, 1952
SPEED FOR 100 km. (62.137 miles)	109.081 m.p.h.	
Harold E. Mistele, U. S.		Aug. 25, 1952
SPEED FOR 500 km. (310.685 miles)	102.274 m.p.h.	
Harold E. Mistele, U. S.		Aug. 25, 1952
SPEED FOR 1,000 km. (621,369 miles)	(None Established)	
SPEED FOR 2,000 km. (1,242.739 miles)	(None Established)	

Contract Schools

(Continued from page 20)

pline and military training, giving periodic and final check rides to students and, in general, coordinating by supervision the program of the individual schools with the complete training program of the Air Forces.

Established now for over a year in most cases, the civilian schools are running smoothly carrying almost the entire primary training program of the vastly expanding Air Forces. Beginning in January the contract schools were relieved of preflight training, all of which is to be concentrated at Lackland Air Force Base, Tex.

Underway also is a modification of the present plan of giving all primary training on Air Force T-6's. Partly as an economy move, and partly to give quicker screening of candidates for pilot training, the contract schools have been authorized to make a joint off-the-shelf purchase of 250 Piper two-place *Super Cubs*, model PA-18, on which some 25 hours of preliminary flying will be given reducing T-6 time to 120 hours but increasing total time to 145 hours.

How good is the six months training given cadets and student officers by the contract schools? If results count, it is very good, for many classes have already graduated into the Air Force's second phase of training where attrition rates lower than 5 per cent testify to success in making the transition to jet fighters and the new types of twin-engine transports and bombers.

Reviewing the training program to date, General Disoway says: "The Air Forces are delighted with the civilian contract schools. They are resourceful and flexible in their operation. Their instructors are older and more experienced than usually found in Air Force primary schools. Most are over 30 and married. Most have had several thousand hours of flying; many have had combat experience which their students respect. All are instructors by choice which is itself a big factor in their success."

A contagious competitive spirit seems to run through every phase of the school program—each new class seems anxious to outdo previous classes—sections and flights compete against each other—schools themselves run daily charts recording their competitive standing in hours flown, in safety records, in maintenance and aircraft availability, in students graduated and in operational costs.

A constant level of about 500 cadets or student officers is under instruction at each of the nine schools with new classes entering each six weeks and graduating in the same order six months later. Each school has some 150 flight instructors and a staff of 35 ground school specialists whose classroom standards would do credit to any college.

Many cadets in fact compare their life at contract schools very favorably with previous college life. Morale at schools visited appears very high. Thoughout the whole program the emphasis is clearly on success rather than on fear of failure. Inevitably there is tension as solo time approaches and again at time for mid-training or final check rides, but so well are cadets and student officers trained for their big moments that most pass with ever increasing confidence in their own skills.

The writer found proof of their confidence at a recent visit to Southern Airways School at Bainbridge, Ga., where 93 per cent of the latest graduating class had elected jet fighters as their first choice for further training. Similar reports are coming from the other schools.

It is too early to offer any complete appraisal of the civilian schools but every present indication is that they have fully justified General Harper's confidence and that they will continue to play an important part in the expansion of our Air Forces. END

Learning the Hard Way

(Continued from page 28)

on the throttle and managed to zoom a few inches over the tree tops—stalled, if anybody ever was stalled. I had sense enough to put the nose down and thus restore flying speed but of course I had missed the landing.

Eventually I got turned around and made a second approach. The airspeed indicator was jumping too much to tell me anything and I was too nervous to have profited much if it had. This time I took no chance of getting down behind the trees. I waited to stall where I could get into real trouble—right over the 50-foot ravine. And believe it or not I hit the ground square on a three point landing and the plane rolled out of sight down into the gully.

The impact of the drop out of the stall shook every bone in my body and when I opened my eyes I expected to find myself in a twisted pile of J-3 *Cub*.

While I sat blessing the saints and trying to collect my wits, two men came running down the ravine. They said they had seen me disappear and were sure I had been killed to say nothing of the plane being wrecked. I got out and we examined the ship to find nothing worse than a broken prop and a superficially damaged left wing.

At this juncture my instructor also appeared. This time I listened with both ears and he didn't spare the horses. He was the maddest individual I had ever seen but he ended up by telling me that I had received one of life's best lessons and, if I ever forgot it, I was hopeless.

Nor do I intend to forget it. Today as I look through my log book—and I still haven't that many hours that I don't count them up now and then—I note one entry especially. It reads—solo airwork, one hour, rough landing. It reminds me that, no matter how much I learn, I'll never learn all that is to be known about flying. END

Cost per horsepower of an aircraft engine today is $17; that of an outboard motor, $35.

STANDARD

AIRCRAFT HANDBOOK

Brand New Oct. 1952 Edition

AIRCRAFT WORKERS' POCKET HANDBOOK of standard methods, procedures, materials and parts. Written by Stuart Leavell and Stanley Bungay, whose previous volumes have sold more than 250,000 copies, this newest aircraft handbook is completely up-to-date with hundreds of the latest AN & NAS standards. Also covers: riveting, bolts and fasteners, tools and their proper use, assembly and installation methods, materials & fabrication, blueprint reading, lofting & templates, standard parts & useful reference tables. 160 pages with hundreds of illustrations. Handy pocket size, 4" x 7". Only $1.50.

Order C.O.D.—or—Send Cash with order and we pay postage. (May be ordered on 10-DAY-FREE-TRIAL.) Write also for FREE AVIATION BOOK CATALOG listing 400 books.

Aero Publishers, Inc.

3162 Sunset Blvd. (F-4) Los Angeles 26, California

HOME STUDY

MODERN AIRCRAFT DESIGN

COURSES IN

Aeronautical Drafting and Engineering

AERO TECHNICAL INSTITUTE

2162 Sunset Blvd. (F-4),
Los Angeles 26, Cal.

Please send your free circular to:

Name_____

Address_____

City_____ Zone____ State_____

PILOTS

INCREASE YOUR EARNING POWER!
Get Your
INSTRUMENT and AIRLINE TRANSPORT RATING *Now*

Train at AMERICAN FLYERS—the world's largest Instrument and Airline Transport School—and insure YOUR future in aviation. American Flyers has trained more pilots for the Airlines than any other school in the country—MORE THAN ALL OTHER SCHOOLS COMBINED!

If you want the most modern and efficient flight instruction—whether you are a veteran or civilian pilot—write to us for our free booklet outlining the courses we have to offer.

VETERANS—Your certificate of eligibility from the Veterans Administration is all you need to enroll at government expense for any of our courses under the G.I. Bill of Rights!
Courses start at any time—no waiting!

Now you can obtain a **H.P. or TYPE RATING on our DOUGLAS DC-3s under the G. I. BILL**

AMERICAN FLYERS INC.

MEACHAM FIELD · FORT WORTH 6, TEXAS

MAIL THIS COUPON TODAY

Please send me FREE Booklet and data on

☐ INSTRUMENT ☐ CIVILIAN
☐ AIRLINE TRANSPORT ☐ VETERAN

NAME_____

STREET_____

CITY_____ State_____

AIRCRAFT FOR SALE

POWERS & GEORGE

"AIRPLANES EVERYWHERE" — *Aircraft Brokers* — TELEPHONE: MU 6-8477 CABLE: POWPLANE

475 FIFTH AVENUE — NEW YORK CITY 17, N. Y.

IT SEEMS TO US: That we have the best supply of civilian aircraft at the lowest asking prices that we have had for some time. Request complete information giving your detailed requirements and price range for prompt service.

AERO-COMMANDER: Our File #5F is late 1952 ship with 230 hours use. Lear auto-pilot. Omni. Dual ADF. Cost $80,000. Asking $70,000.

ANSON V: Our File #96F has 1334 hours total. 617 hours since completely overhauled. Twin P&W 450 HP., engines. 2 crew. 4 passengers. Gyros. Omni. ADF. Excellent. $10,000.

BEECHCRAFT BONANZAS: 43 from $6750. Painted 1947, #8044TF, has 250 hours since OH. Extra tank. Gyros. Omni. $7000. Also; A-35, #68FBF, with 400 hours since OH. Zero 1952 205 HP., engine. Metal prop. Extra tank. Gyros. Omni. $9780. Also; painted C-35, #64TDF, with 100 hours since OH. Gyros. Omni. $14,250.

BEECHCRAFT STAGGERWINGS: 8 available. Exceptional pre-war 285 HP., #1707GF, has 520 hours. Completely refinished. Gyros. Radio. Undamaged. Bargain. $2900. Also; pre-war 450 HP., #6628XF, with 50 hours since overhaul. Gyros. ADF. Excellent. $4950.

BEECHCRAFT TWINS: 20 from $22,350. 1946 D18S Executive, #8021JF, has zero time since completely overhauled. Divan. Constant speed propellers. De-icing. VHF. ADF. $45,900. Also; 1946 D18S Executive, #8021GF, with 10 hours since overhauled. Hydromatics. Excellent radio. Extras. Beautiful. $60,000.

BELLANCA CRUISAIRS: 18 available. 1946, File #412F, has 75 hours on new engine. Recovered 1951. 1952 Aeromatic. Spinner. Primary blind. Radio. Bargain. $2950. Also; 1947, #7443ZF, with new engine. Aeromatic. Heaters. Gyros. Omni. Many extras. Fabric excellent. $4500. Also; 1948, #7448JF, with only 291 total hours. Aeromatic. Primary blind. Radio. Hangared. Fabric excellent. $4750.

BELLANCA CRUISMASTERS: 2 available. 1951, #54GAF, has only 45 hours. Standard plus VHF and ADF. Hangared. Undamaged. New. $10,500.

CESSNA 170'S: 36 from $3400. Late 1948, #413ZVF, has 324 hours since overhaul. Crosswind gear. Metal propeller. Gyros. Omni. Loop. $3750. Also; July 1950 all metal, #990PAF, with 100 hours since overhaul. Metal propeller. Gyro. Omni. Bargain. $5000. Also; 1950 painted metal, #979SAF, with only 319 hours. Metal propeller. Gyros. Omni. Extras. Hangared. Undamaged. Exceptional "buy." $6000.

DeHAVILLAND BEAVER: 1950, painted all metal, #149XVF, has 332 total hours. 2 crew. 4 pasengers. Gyros. Omni. ADF. Oxygen. Best condition. Licensed U.S. $32,500. Make offer.

DOUGLAS C-47 EX C-53: #995TFF has 21 passenger seats, heavy floor and gear. 950 hours since 8000-hour OH. 1830-92 engines and hydromatics 35 hours. Best airline equipment. Excellent for cargo and passenger use. All late bulletins. December license. Best condition. Priced reasonably. $95,000.

GRUMMAN WIDGEONS: 6 available. G44, #2867RF, has 50 hours since complete OH. Metal props. Gyros. Omni. Lear-12 ADF. Bargain. $11,900. Also; G44, #6595PF, with modified hull. Zero time since OH. Recovered, repainted, re-upholstered and relicensed August. Metal props. Gyros. VHF. Exceptional. $16,300.

LOCKHEED LODESTARS: 16 from $39,000 including several very plush Executives with zero time since completely overhauled.

LUSCOMBE 90 HP., 8F'S: 7 available. 1949, #227QBF, has only 136 hours. Metal propeller. Radio. New condition. $2100.

LUSCOMBE SEDAN: 1948, #167RBF, with 220 hours since overhaul. Hartzell propeller. Primary blind. Omni. Extras. Clean. $4000.

NAVIONS: 44 from $5500. Painted 1947, #9161FF, has 450 hours. 125-hour 205 HP., engine. Leather upholstery 1952. Hartzell controllable propeller. Spinner. Flares. Gyros. ADF. Beautiful. $6650. Also; 1948, #449XKF, with special 225 HP., engine. 120 hours since OH. Latest wheel fairings and long stacks. VHF. ADF. Hangared. Exceptional. $7800. Also; November 1949, #499XKF, with only 183 hours. ADF. Extras. New. $11,000.

NAVION SUPER 260'S: 6 available. 1951, #537QKF, has 231 hour 1952 engine. Standard with Lear-12 ADF. Bargain. $12,800.

PIPER CLIPPERS: 8 available. 1949, #549JHF, has 203 hours. Standard, with radio. Relicensed. $2500. Also; 1949, #532PHF, with 350 hours. Metal propeller. Primary blind. LF. Omni. Extras. $3000.

PIPER PACER 125'S & 135'S: 25 available. 1950, 125 HP., #700GKF, with 318 hours. Metal propeller. Gyro. Radio. $3350. Also; 1950, #746PKF, with 215 hours. Metal propeller. Primary blind. LF. Omni. Hangared. Undamaged. $4000. Later Custom 135's also available.

PIPER SUPER-CUBS: 3 from $3000. 1950, #756FKF, with 125 HP., engine. 100 hours total. $3500.

PIPER TRI-PACER 125'S & 135'S: 16 available. 1951 125 HP., #81TAF, has 82 hours. Metal prop. Gyro. Radio. Loop. $4230. Also; 1951, #61ZAF, with 304 hours. Variable prop. Gyros. LF. Omni. Hangared. Excellent. $4500.

STINSON 1948 165'S: 24 from $2400. #693SMF first sold 1949. 315 hours. Heavy crankcase. Standard. Hangared. Undamaged. Best condition. $3500. Also; #666FMF with 340 hours. Cabin-controlled aeromatic. Gyro. LF. Omni. Hangared. $3950.

SWIFT 125'S: 22 from $3000. #334GKF has 390 hours. Aeromatic. Primary blind. Extra radio. Excellent. $2100. Also; 1948, #236RBF, with 223 hours. Aeromatic. Primary blind. Radio. Relicensed. Hangared. Undamaged. $2900.

ALL TYPES OF AIRPLANES AVAILABLE AND LISTINGS SOLICITED FROM $2,000. WRITE FOR DETAILS DESCRIBING THE AIRCRAFT YOU WANT TO PURCHASE, OR THE SHIP YOU WISH TO SELL.

Photo Credits

The following list shows the sources from which photographs and illustrations in this issue were gathered. Where a single page is indebted to several sources, credit is recorded left to right, top to bottom:

4—FRED SWARTZ, LOS ANGELES.

12, 13—LEE WULFF, SHUSHAN, N. Y.; MAP BY WALTER GALLI.

16, 17—DEPT. OF DEFENSE.

18—D. W. ONAN AND SONS, MINNEAPOLIS.

19, 20, 21—LT. VICTOR HEURLIN; KNIGHT'S STUDIO, BAINBRIDGE, GA.; HANS GROENHOFF; JAMES R. GREENWOOD.

22, 23—CARROLL SEGHERS, II.

26, 27—BRITISH INFORMATION SERVICES.

30, 31—NATIONAL ADVISORY COMMITTEE FOR AERONAUTICS.

32, 33—GEORGE F. VARGO, DETROIT.

34—DEPT. OF DEFENSE.

37—WALTER STEINHARD, STINSON.

38, 39, 40—U.S. AIR FORCE; BRITISH INFORMATION SERVICES; CONVAIR; CESSNA AIRCRAFT CO.; DIFFUSION INFORMATIONS AERONAUTIQUES; RILEY AIRCRAFT CORP.; BRITISH INFORMATION SERVICES; KELLEY'S STUDIO, HAGERSTOWN, MD.; TEMCO AIRCRAFT CORP.; GRUMMAN AIRCRAFT ENGINEERING CORP.

43—LEE WULFF, SHUSHAN, N. Y.

48—R. S. JOHNSON, DETROIT.

54—C. L. HAMILTON.

AIRCRAFT FOR SALE

FOR SALE

NAVION 1947—185 HP

EXCEPTIONAL CONDITION

Beautiful new "chariot red" lacquer finish. Special new custom interior. Full blind panel. Flares, landing lights. 20-gal. auxiliary tank. Shoulder harness. Lear VHF with Omni. LF & Lear ADF. Marker beacon. Hartzell controllable prop 1951. New Adel Romec fuel system. New tires. Gyros. Platinum plugs. Total time 460 hours. Engine 91 hours since modification and top overhaul. All bulletins complied with. Just had 100 hour and relicensed. $8750.00.

RAY SAIDEL

390 Hawthorne St. — Manchester, N. H.

EXECUTIVE TRANSPORT AIRCRAFT

BUYING OR SELLING

Either way our 20 years of experience and nation-wide contacts are at your service in Personal, Executive and Transport Aircraft.

JIM WELSCH

AIRCRAFT SALES

60 East 42nd Street, Suite 628

New York 17, New York — Murray Hill 7-5884

EXECUTIVE TRANSPORT

FOR complete market reports of available Beech, Convair, Curtiss, Douglas, Grumman, Lockheed or other multi-engine aircraft, write or call William C. Wold Associates, 516 5th Ave., New York 36, N. Y., Telephone Murray Hill 7-2050.

I Learned About Flying

(Continued from page 40)

me I was ready, especially as there was a cool, refreshing lake downstairs.

As I passed through 4,500, the acid spray from the battery started to subside rapidly, and for the first time during the descent I could fly without having to squint between the fingers of my hand. I called the tower and told them that I was "10 on Final" for 17, and that the acid spray had diminished noticeably. I rapidly went through my GUMP check and tried desperately to keep the windshield clear enough so that I could see to land. Many things flashed through my mind but the dominating worry was the thought of being washed out for flying inverted.

The field was coming up at me rapidly and I could hear the tower operator giving me words of encouragement. I lowered ¼ flaps, and came in a little hot, just to be on the safe side. She hit, bounced, and hit again this time staying down, and luckily enough, level. The fire truck, ambulance and half the field were watching, and as I taxied into my slot I thought to myself that I had just made my last flight in a military aircraft. The moment the engine was cut, mechanics began to swarm over the ship, and as I climbed out I saw that all of the paint from the cowling down to the trailing edge of the wing was eaten away. With the cowling removed, the battery could be seen cracked in two places and one of the oil lines was hanging by a thread.

After a thorough check by the flight surgeon and a new issue of shoes and flying suit, I was again ready to resume training. The doctor told me it was a lucky thing that it was a warm day, as my perspiration was what saved me from being badly burned by the acid.

Lady Luck was indeed with me, for I received praise from my instructor instead of what I had expected. I am completely cured of flying inverted in a ship not built for it. END

The Irish Do It, Too

(Continued from page 35)

They were just too high to go over using my surplus height—I should have overshot. They were just too low to go under, too.

I turned right, for no better reason than that it was as good as turning left and a high hedge presented itself. I had just enough flying speed to lift her through the top of the hedge. With the stick right back and the brakes applied, I just waited to see what was on the other side of that hedge. It turned out to be grass, not much of it, and downhill. As she dropped, a lucky gust of wind eased her down and she started to skid down the hill. An intentional ground-loop just saved her from piling into the far hedge.

The total of apparent damage seemed to be one loudspeaker slightly bent. All she needed was some more gas and a little more space. By this time the usual crowd had begun to gather and, as the owner of the land very kindly offered me the use of his car, I unloaded the camera into the car and told Bert to try to get the plane into a larger field and, if this was possible, to remove every piece of unnecessary equipment, including those wretched loudspeakers.

Lost Assignment

In spite of the fact that the car, a very ancient Ford, was entirely without brakes, I managed to reach Shannon, about 15 miles away—just 10 minutes too late to get my photograph of the consignment, which had found its way into a bonded warehouse. However, I was lucky in meeting Sam Pratt.

Sam is an engineer on the staff of one of the American airline companies at Shannon. More important, from my point of view, he spends a lot of his spare time flying a very ancient Piper *Cub* in and out of the most impossible places. Sam is the most skillful light aircraft pilot I know and I value his opinion. I persuaded him to come along and cast his eye over the Auster and also to act as a "second opinion" as to whether it would be safe to fly it off.

We collected a couple of gallons of 73 octane in a can and drove back to the field. Bert, with the aid of the farmer and a few dozen helpers, had managed to level some forty feet of hedge and had pushed the Auster into the next field. Everything moveable had been stripped from her and she was backed into the corner of the field facing into a very strong wind indeed. Sam pronounced her airworthy and we paced out the field to see how much room there was for take-off.

All the Hazards

The distance was all right—75 yards—but the field was hump-backed with a dew pond at the top of the hump and a 15 foot hedge up-wind. Beyond the hedge the ground sloped away for about 150 yards. I decided that if I could "jump" the Auster over that hedge I should have room on the far side to gain enough flying speed for a straight climb.

On full throttle she seemed to crawl up the few yards to the dew pond and then to slowly gather speed down the hill towards the hedge. At the last minute I came down hard on the flap lever and eased back on the stick. She jumped that hedge like a horse with inches to spare and began to settle on the far side with nothing on the clock. Just before her wheels touched again she started to climb and I was away.

I reached Shannon without further difficulty and was soon sitting in the lounge drinking coffee and waiting for the rest of the party to arrive by road. The Auster was sitting on the apron alongside a Pan American *Constellation* and I was wondering how a pilot with nearly 1,000 hours of accident-free flying could be such an idiot all in one day, and get away with it. END

TAX ELIMINATED

South Carolina, midway between populous northeastern cities and Miami, has made a bid for more aircraft refueling business by dropping its longtime road tax from the price of aviation gasoline.

THE BIGGEST PLANE IN ITS PRICE CLASS

The executive who must travel with a staff of several people will find the big, roomy TOURIST can't be beat by any plane near its cost for space and load-carrying ability.

It's a real businessman's plane with smooth, attractive lines and a modern limousine-interior designed by one of the country's top designers. Mechanically, the TOURIST tops all others too, with its rugged construction and 145 H.P., 6-cylinder engine.

SEND COUPON FOR DESCRIPTIVE FOLDER ON TAYLORCRAFT'S 4-PLACE "TOURIST" AND 2-PLACE "SPORTSMAN"

TAYLORCRAFT, INC.
Conway-Pittsburgh Airport, Conway, Pa.

Taylorcraft, Inc. DEPT. 11
Conway-Pittsburgh Airport, Conway, Pa.
Please send me descriptive folder on Taylorcraft's new airplanes.
Name.....
Street.....
City.....State.....

Get out in front!

Get your ratings!

Prepare at home, the sure way, with the Zweng Manuals—each with latest typical examinations!

1. Private & Commercial Pilots ($4.00)
2. Flight Instructor ($4.00)
3. Ground Instructor ($4.00)
4. Instrument Rating ($4.00)
5. Airline Transport Pilot ($4.00)
6. Aircraft & Engine Mechanics ($4.00)
7. Airport Management ($4.50)
8. Flight Navigator ($3.00)
9. Dispatcher & Control Tower Operator ($4.00)
10. Link Trainer Instructor ($4.00)
11. Parachute Rigger ($3.00)
12. Meteorology ($3.00)
13. Flying the Omnirange ($4.00)
14. Manual of the E-6B Computer ($3.00)
15. 1953 Flight Engineers Manual ($4.00)

These manuals have prepared thousands of airmen for their ratings. They can lead you, too, to high-paying jobs in the booming aviation industry. Circle the numbers of the Zweng Manuals you want, and mail the coupon today!

PAN AMERICAN NAVIGATION SERVICE
12021 Ventura Blvd. F-4
North Hollywood, California

Please send me the books I have circled by number.
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
☐ Payment enclosed. ☐ Send C.O.D.
☐ Send me a free copy of your new 1953 catalogue.

Name.....
Street.....
City & State.....

Night Check-Out

(Continued from page 18)

easy as in the daytime. Only for the first time or two need you be so super-careful.

The take-off run is the same as you've always made, only now you steer for a light on the far end of the runway to hold your direction. Give the plane full power and don't hurry it off. Let it fly itself off with plenty of excess speed, then reduce power gradually to your normal climb setting.

Before you reach the end of the runway start a conservative turn to the left (or right in a righthand pattern) keeping the field always within gliding distance. Most engine troubles seem to develop when the plane is working hard on take-off, and at night you don't want to land anywhere but back on the field.

Climb to 700 feet and start your downwind leg, all the time keeping an eagle eye for traffic. The neck should be swiveling. If you do spot something, and have landing lights, give a few quick flashes to warn the fellow you are near him. Don't use the light excessively, either in the air or on the ground, because it destroys your night vision. You probably have a red light in the cockpit to show your instruments. You also should carry a spare flashlight in your breast pocket on all night flights, in case the panel light fails. A penlight is excellent because it does not give too much illumination, and clips into the breast pocket where it can be reached in a jiffy in an emergency.

As you start your downwind leg, pull on the carb heat. You pull it on early because you want to be *sure* that no ice is in the carburetor when you chop throttle for your glide.

On the glide itself, do not take off all power. Keep a few rpm as insurance against ice. When you need throttle at night you really need it! Trim for usual glide speed, and let the airplane come down in the usual 180 degree approach, but keep it smooth and gradual to avoid sudden maneuvering in lining up with the runway. Clear the engine from time to time with a short, smooth application of power.

If you are high on final, do not attempt to slip off excess altitude. This is all very well on your home field where you know the position of each tree and bush. But it is a bad habit. On strange fields, you may slip into a tree you never knew was there. If in doubt, go around again. It takes a minute or so, but your life will be long and happy if you spend that minute now.

The actual payoff, of course, is the flairout and touchdown. This part of the landing is the point where you may tend to tighten up and do something foolish—if you are inexperienced—and is why I'd recommend that a check pilot be taken along for the first night ride.

If you have landing lights, use them for your first three or four landings while you are gaining confidence. A good landing light really shows you the runway. With it, you can make your normal daytime full stall landing (if the wind isn't high). After you've done a few of these, make some wheel landings, still with the light.

Then turn the light off and leave it off. Line yourself up, on final, with the green lights on the end of the runway, glide down, and as you cross the field boundary, be sure you are centered between the two parallel rows of boundary lights.

Wheel Landings

You now are ready for a dark landing. The only thing you don't know is when the wheels will touch. As you settle toward the deck, add a little more power to flatten out the glide. Then, as you feel you are almost down—that she'll touch in a split second—add just a hair more power and cushion it on. The tires will go scrunch and you've got it made. This is a wheel landing, and pilots call it "feeling for the runway," which is exactly what it is. It is a very flat, slowspeed power flight, with small rate of let-down—a very safe and positive way to do it.

I would strongly suggest you make your first night landings on a long field with good lighting and hard runways. The reason for learning on such a field is that you can afford to take time and do it right. You don't have to hurry or worry while you are learning. If you do decide to go around again, you can make the decision without haste, and avoid emergencies.

Always taxi slowly at night. It is easy to get a touch of vertigo, or to look down into the cockpit to check something and not be able instantly to orient yourself when you peer through the windshield again. If you are rolling too fast, it is easy to groundloop at night.

A final word of caution. Single engine aircraft are not the finest night aircraft in the world. Don't make a habit of night cross-country except in good weather, preferably with a bright moon, with good equipment, and with at least a landing light and a flare or two. Myself, I'd wear a chute.

END

AIRCRAFT PARTS AND EQUIPMENT

THROW AWAY YOUR ADF COMPUTERS

INSTALL A RABI*, and get INDICATED BEARINGS instead of COMPUTED BEARINGS.

RABI*—Rotatable Azimuth Bearing Indicator.

COMPARE THIS!

- The RABI makes your ADF indicate bearings like an OMNI.
- The RABI is the lowest priced rotatable azimuth ever offered to the public: only $4.95.
- The RABI fits over the face of ALL 3-inch ADF indicators, and takes only 5 minutes to install.

RABI available in two Models.
Model L-2 for "Lear" ADF's only.
Standard Model for all other makes.

RABI Box 522 Medford, Oregon

Airtex SHOULDER HARNESS FOR YOUR PACER

COMPLETE SET $25.00 (4 place)

Supplements your regular safety belt

NO MODIFICATIONS NECESSARY

Anyone can install—Instructions supplied. Kit includes detachable extension straps for anchoring front seat harnesses.
No interference with passenger comfort.
AVAILABLE FOR OTHER PLANES, TOO!
Write for Circular F-3. C.O.D.'s accepted.

AIRTEX PRODUCTS
22 Union St. Morrisville, Penna.

AERONCA MANUAL
REPRINT 7AC CHAMPION

AIRCRAFT SERVICE MANUAL..... $2.50
Complete stocks for Chief, Champion, Sedan. Distributor's early model stock. Please write!

Lift Strut, Front 7AC Champ	$20.95
Lift Strut, Front 11AC Chief	20.95
Lift Strut, Rear 7AC Champ	16.61
Lift Strut, Rear 11AC Chief	16.61
Window, Sliding Front 7AC Champ	7.75
Window, Sliding Rear 7AC Champ	6.88
Windshield, 7AC Champ	47.70
Windshield, 11AC Chief	49.50
Windshield, 15AC Sedan one half	32.95
Exhaust Stack, Stain. Champ, Chief	22.25

WESTAIR, INC. Dept. F-12
WESTCHESTER COUNTY AIRPORT
White Plains, New York

Navigation Equipment

E-6B COMPUTERS, with 30 page direction booklet, leather cases, like new ($10.00 value)..... $5.45
SEXTANTS, Fairchild, bubble, averaging type, with carrying cases, like new ($300.00 value)..... $16.85
DRIFTMETERS, B-5, with powerful optical lenses, like new..... $16.85
FLUX-GATE COMPASS SYSTEM, Pioneer (includes master indicator, transmitter and amplifier)... $125.00

KANE AERO EQUIPMENT COMPANY
2308 N.E. 23rd St., OKLAHOMA CITY, Okla.

NAVCO, Inc.
Stocks and distributes parts and supplies for
EXECUTIVE AIRCRAFT

DOUGLAS	BEECHCRAFT	LOCKHEED
PRATT & WHITNEY	CONTINENTAL	WRIGHT
COLLINS RADIO	A.R.C. RADIO	BENDIX RADIO
SPERRY GYRO	LEAR RADIO	SKYLAC
GOODRICH	FIRESTONE	GOODYEAR
SKYDROL	AEROQUIP	MANY OTHERS

Air Express Service—Call TE 5-1511
Lambert Field St. Louis 21, Mo.

REMMERT-WERNER
Builds and Services
AMERICA'S EXECUTIVE AIR FLEET
specializing in

DOUGLAS	PRATT & WHITNEY	COLLINS RADIO
BEECHCRAFT	CONTINENTAL	A.R.C. RADIO
LOCKHEED	WRIGHT	BENDIX RADIO

DISTRIBUTORS
CAA Repair Station #3919
Lambert Field St. Louis 21, Mo.

Helicopter Ambulance

(Continued from page 34)

ing and a police escort, would have taken 56 minutes to cover the 22 road miles involved.

This startling time-saver revealed dramatically the life-saving possibilities of such flights in the continental United States. Service hospitals in so many cases are a good distance away from airbases.

MATS accordingly started a series of short mercy hops by helicopter to service hospitals in the vicinity of Washington, D. C.

Brig. Gen. Wilford Hall, air surgeon of MATS, witnessed the flights at Andrews and was a passenger aboard the H-19 on several occasions. It was parked close to the big four-engined C-54M's as they arrived with their Korean wounded on regular schedules from Travis AFB, Calif., by way of Kelly AFB, San Antonio, Tex., or Brookley AFB, Mobile, Ala.

Gen. Hall watched one flight take off from Andrews to the Fort Belvoir Station Hospital, in nearby Virginia. The helicopter flew the 21 air miles in 18 minutes. An ambulance, weaving through traffic and subject to collision or other accident, took, by comparison, one hour and 12 minutes to cover the 30 road miles to Belvoir.

Stateside Schedules

While this does not mean that the day of the ambulance is over, it does highlight still another use for the versatile helicopter, and presages the time when emergency mercy hops will be on a daily schedule within the United States, just as now they are a daily occurrence in Korea.

Helicopter flights, unlike ambulance trips, have the advantage of being practically vibrationless and without jarring, a paramount consideration in carrying wounded. Litter patients hardly know they are being transported, except for the drone of the rotors. The H-19 carries 10 ambulatory passengers, or eight litter cases and an attendant.

Although the weather was not all to be desired, the first Washington area flights fulfilled every hope of Gen. Hall and several foreign authorities on air evacuation. There were 20-mile-an-hour gusts and an 1,800-foot ceiling. Pilots Emerson E. Heller and Louis B. Switzer, of the Air Rescue Service, kept the 'copter skimming along smoothly at a 700-foot altitude en route to Bethesda.

During the flights, the patients appeared totally unconcerned. One soldier, who had been hit by a mortar shell, read a magazine. Another was cared for by Flight Nurse Patty Barrett, stationed at Travis AFB with the 1733rd Air Transport Squadron of MATS. Flight nurses will go along in the helicopters when seriously ill or badly wounded men are aboard.

Gen. Hall hopes to add 25 more 'copters to the present MATS air evacuation fleet of 10 C-54M's and 28 C-47's. The air evac bases each would receive two or three of the H-19's.

Highly satisfied with the Washington flights, he believes the short mercy hops would be of similar benefit elsewhere in the United States. For instance, in the Philadelphia area, an ambulance takes two hours to run the 35 miles from Willow Grove Naval Air Station, a big air evacuation receiving point, to Valley Forge Hospital. A helicopter might do it in a little more than 15 minutes. While it is true that these flights are not the shortest on record—some in Korea by the 3rd Air Rescue Squadron have taken as little as seven minutes—to military planners they promise endless possibilities.

END

Classified Advertising

RATE: 30c PER WORD — MINIMUM 10 WORDS

AIRPLANES FOR SALE

BEECH

$1.00 CAN save you hundreds. Read our Miscellaneous advertisement. Aircraft Listing Bureau, 1907 Archer Ave., Chicago 16, Ill.

CESSNA

$1.00 CAN save you hundreds. Read our Miscellaneous advertisement. Aircraft Listing Bureau, 1907 Archer Ave., Chicago 16, Ill.

HOWARD

HOWARD DGA-15P-6H-2 450 Pratt & Whitney. Engine and Fabric in excellent condition. New Tires, Hand Waxed. Hangered. Price $2495.00. John L. Coulson, Rt. #2, Tulelake, Calif.

PIPER

6 PIPERS For Sale 6. 3 1950 125 Pacers, 3 1951 & '52 125 Supercubs, many extras. Also Piper Sprayers & Dusters. Prices are reasonable. Write for details. General Airplane Service, Box 250, Sheridan, Wyo.

$1.00 CAN save you hundreds. Read our Miscellaneous advertisement. Aircraft Listing Bureau, 1907 Archer Ave., Chicago 16, Ill.

SWIFT

SWIFT 125, 585 hrs. total, 194 SMOH. Painted, company owned, fully equipped, leading edge landing lights, aeromatic, perfect condition. Deliver anywhere U.S. $2200. Strong Drilling Co., 1503 W. Holloway, Midland, Texas.

SWIFT 125; 1948, #2301B, 457 Hrs., Aeromatic, Gyros, VHF/LF, Omni, Landing Lights, Hangared, Many Extras, Perfect Condition, $3300. Offers considered. F. J. Maywald, 84 Montross Ave., Rutherford, N. J.

AIRCRAFT FOR SALE

Additional Listings of Aircraft for Sale!

See

SPECIAL CLASSIFIED DISPLAY SECTION ON PAGE 62

TAYLORCRAFT

TAYLORCRAFT 4-place Tourist. Biggest value, biggest airplane in its class. Write for leaflet. Taylorcraft, Inc., Conway-Pittsburgh Airport, Conway, Pa.

AIRPLANES MISCELLANEOUS

AIRPLANES—Wholesale. World's largest stock—Lowest prices! Operators send for dealer discount setup. We deliver, guarantee, etc. Domestic and Export. Lists furnished in English and Spanish. Vest Aircraft Co., 4600 Dahlia St., Denver, Colo.

SPECIALIZED Dealer Retail Sales Financing. Dealers write for service setup. Aircraft Finance, Inc., 4600 Dahlia, Denver, Colo.

$1.00 CAN save you hundreds. Each month we print listings of hundreds of aircraft available for sale throughout the United States. This list tells you where the type of airplane you desire is located. You contact the owner, and make your own deal. By dealing direct you eliminate all middlemen's commissions, and save time, money, and get the best deal possible. You can receive your first copy listing aircraft for sale immediately. So don't wait! Send $1.00 today for a full year's subscription. Aircraft Listing Bureau, 1907 Archer Ave., Chicago 16, Ill.

AIRPLANES WANTED

WOULD you be interested in trading your executive twin engine aircraft for beautiful 200 acre lodge complete with buildings. Can be used for hunting and fishing lodge or for vacations for your executive staff. Write Box 1153, Helena, Montana, for brochure.

WANTED—Good Beach Bonanza. Give all details and best cash price. Goodall Elec. Mfg. Co., Ogallala, Nebr.

CHARTS & MAPS

AVIATION Charts now available from our new Chart Division. We are agents for the Coast and Geodetic Survey. Our service includes Aeronautical Sectional, World Aeronautical, Direction Finding, Navigational Flight, etc. (Free catalog.) Pan American Navigation Service 12021-B Ventura Blvd., N. Hollywood, Calif.

PARTS & ACCESSORIES

SWAP your old prop in on a new Met-L-prop. You'll like this deal. Luther Parts, Johnstown Airport, Johnstown, Pa.

USED parts, engines, props, and radios for nearly all airplanes. What do you need? What do you have to sell or swap? Luther Parts, Johnstown Airport, Johnstown, Pa.

FREE Catalog! Instruments, batteries, tires, computers, etc. Gaare Supply Co., Box 277-E, Weatherford, Texas.

WANT to buy one set of floats 24-25. L. Perrequet, 7348 Chambord, Montreal, Que., Canada.

BOOKS

PASS CAA Exams. The exact word for word copies of the new CAA exams is the basis of our questions and answers. You get our old and new sets including a guarantee. Order yours now on a 10 day trial basis. All subjects for any rating $10.00. Any four ratings $20.00. Exam Clerk, Box 1073-B, Washington 13, D.C.

CAA Exams. Our exams are brought up to date weekly and are based on the exact CAA questions and answers. Money back guarantee included. Commercial, Private, Powerplant Mechanic, Instrument, ATR, Flight Instructor, Airframe Mechanic. Any one rating $5.00. Any four ratings, $10.00. Acme Flight School, Municipal Airport, Ft. Worth, Texas.

FREE Aviation Book Catalog. 400 books listed from all publishers. Write: Aero Publishers, 2162-4 Sunset Blvd., Los Angeles 26, Calif.

FAMOUS Aviation Quiz Books by "Zweng" prepare you for your ratings. These outstanding texts lead the field; frequent revisions protect you. The latest authentic "multiple choice and map Examinations" are included with latest weather map and important new material not available elsewhere in each book without charge. Why take a chance—ask for Zweng Aviation Books; there is one for each rating viz.: Flight Instructor $4.00; Aeronautical Training (Commercial and Private rating) $4.00; Radio & Instrument Flying $4.00; Instrument Flying (Weems & Zweng) De Luxe $4.50; Airline Transport Pilot $4.00; Aircraft Dispatcher $4.00; New (1953) Flight Engineer $4.00; Link Instructor Rating $4.00; Parachute Technician Rating $3.00; Meteorology for Airmen $3.00; New Practical Manual of the E-6B $3.00; New Civil Air Regulations Manual $1.00; Log Books, all ratings $1.00 to $7.50; new Air Stewardess Log Book De Luxe $2.00; new Steele Log Book De Luxe $1.50; Airline AP6 De Luxe Log, 264 pgs., 6x10", $6.50; Aircraft and Engine Mechanic including Hydraulics weight & balance, two books in one (new) $4.00; Airport Operation and Management $4.50; Zweng Aviation Dictionary $6.00; "Flight Instructor Oral Examination" (new) $1.00; "Flying the Omnirange" by Charles A. Zweng, De Luxe limited edition only $4.00; Electronic Navigation (Orman) $4.50. Books by other authors: Helicopter Guide $2.00; Air Officer's Guide $3.50; Crop Dusting (6 Manuals) $12.50; Airline Piloting (Bullock) $3.00; Safety After Solo (Hoyt) $3.50; Leading Airline Executives and Pilots owe their success to early training with Zweng texts. (Free Catalog.) Pan American Navigation Service, 12021-8 Ventura Blvd., N. Hollywood, Calif.

CAA Exams: Obtain your CAA licenses by using a Ross guaranteed questionnaire based upon the current CAA exams. Our frequent revisions insure you receiving the latest authentic "multiple choice examinations and maps." Select your Ross questionnaires from the following list. "Commercial Pilot $4.00"; "Flight Instructor $4.00"; "Instrument Pilot $4.00"; "Private Pilot $1.00"; "C.A.R. for Pilots 50c"; "Engine Mechanic $3.00"; "Aircraft Mechanic $3.00"; "Control Tower Operator $3.00"; "Parachute Rigger $3.00"; "Meteorology Instructors $2.50"; "Navigation Instructors $2.50"; "C.A.R. Instructors $2.50"; "Engine Instructors $2.50"; "Aircraft Instructors $2.50"; "Fundamentals of Instruction $1.50." Special offer! $15.00 will buy a complete set of the above Ross questionnaires, you save over 62%. If you are not completely satisfied, your money will be refunded in full. Order direct from Ross Aero Publishers, Dept. 1-F, Tulsa, Okla.

PATENTS

INVENTORS. Without obligation, write for information explaining the steps you should take to secure a Patent on your invention. John N. Randolph, Registered Patent Attorney, 218 Columbian Bldg., Washington 1, D. C.

INVENTORS. When you are satisfied that you have invented something of value, write me, without obligation, for information as to what steps you should take to secure a Patent. Write Patrick D. Beavers, Registered Patent Attorney, 912 Columbian Bldg., Washington 1, D. C.

INSTRUCTION

KNIGHT Twister Biplane. 12 construction drawings $11.75. Vernon W. Payne, 5139 Barlin Ave., Long Beach 11, Calif.

NAVIGATOR Rating Examinations included in New Aeronautical Navigation by Charles A Zweng $3.00; Fairchild Surplus (electrical averager) Sextant $17.50; Pilots, supplement your training. Order "Ground Instructor" $4.00 and "Ground Instructors' Rating" $4.00. Examinations included. Pan American Navigation Service, 12021-8 Ventura Blvd., N. Hollywood, Calif.

LEARN to fly with the Aviation Cadets. Men 18 to 26½ get $105 a month while learning. Prepare quickly for qualifying examinations. Guaranteed "Practice Tests" with answers. Cadets and Officer Candidates, each $3.25. Both $5.00. Prepaid. Cramwell Publications, Air Institute, Adams, Mass.

HOME built aircraft information sheets. $1.00. Box 697, c/o Flying.

IT'S Easy To Learn A Language By Linguaphone Conversational Method. At Home, in leisure time, quickly master French, German, Spanish, Russian, Japanese, any of 29 languages available. Send for Free Book. Linguaphone Institute, 128-04 Mezz., Rockefeller Plaza, New York 20.

BULLET Raceplane—Homebuilt, Speedy Monoplane. Blueprints $2.00. Corbcraft, 81-F Elmerston Rd., Rochester 20, N. Y.

CORRESPONDENCE Courses on Aeronautical Drafting and Engineering. Write for free folder. Aero Technical Institute, 2162-4 Sunset Blvd., Los Angeles 26, Calif.

HELP WANTED

CONSTRUCTION Job List. Published Monthly. $1.00. Dempster's Construction Scout News, Dept. 268-OQ, Bridgeport, Ill.

FOREIGN Jobs. Contracts underway and soon starting in Africa, South America, Canada, England, Europe, South Pacific, Middle East, Mexico and Alaska. Send $1.00 for foreign job news, information, application forms, etc. DCS Foreign Job News, Dept. 268-OR, Bridgeport, Ill.

OVERSEAS Jobs. Big pay, transportation expenses. Clerical, professional, mechanical workers. Most all trades. Latest listings airline, construction, manufacturing, oil, steamship companies, government agencies, many other opportunities. Up to date information on securing employment, contracts, income tax, application forms. $1.00. Overseas Jobs, Box 335-C7, Baton Rouge, La.

CONFIDENTIAL reports on best paying opportunities for pilots and ground personnel with airlines, feeder lines, non-scheduled operators, flight schools, aircraft factories, crop dusters and many others. Foreign and domestic jobs for skilled and unskilled. Also, oil, construction and government openings. All for only $2.00, including one year registration and advisory service. Satisfaction guaranteed. Research Services, Box 1011-FH, St. Louis 1, Mo.

AIRCRAFT Workers, urgently needed at Taylorcraft. Immediate openings for experienced acetylene welders, sheet metal workers, spray painters, assemblers, and aircraft mechanics. Apply in person, personnel Mgr., Taylorcraft, Inc., Conway-Pittsburgh Airport, Conway, Pa.

FOREIGN employment construction work. If interested in foreign projects with high pay write Foreign Service Bureau, Dept. F-L; Box 295, Metuchen, N. J.

JOBS available: Commercial pilots—we have the job you want! Send for free application blank. Pilots Employment Agency, Box 1152-G, Teterboro, New Jersey.

DOUBLE Your Pay with a "College Equivalency Diploma." Get it by comprehensive examination at home. No classes. Free details. Cramwell, RD, Adams, Mass.

SITUATIONS WANTED

AIRLINE Captain, college education, fifteen years experience in all phases of civilian aviation, desires position as airport manager, executive pilot or flight school manager. Box 696 c/o Flying.

TRANSPORT Pilot, age 29, 3700 hours, 1200 DC-3, 1300 DC-4. Commercial, Instrument and FCC licenses. Airline, Corporation, and Military experience. Desire position with corporation. Box 698 c/o Flying.

AVIATION EQUIPMENT

FREE catalog describing famous Weems navigation aids and instruments. Send today. Weems Mark II Plotter (statute miles) $2.00; Weems Mark II N Plotter (nautical miles) $2.50; Dalton E-6B Computer $10.00; Dalton Mark VII Computer $5.00; Link Bubble Sextant $37.50; many navigation books including Flying the Omnirange, Zweng $4.00; Instrument Flying, Weems and Zweng $4.50; Electronic Navigation, Orman $4.50; Learning to Navigate, Weems and Eberle $2.00; Star Chart, Illyne $1.00; complete line of government charts and publications. Do as other navigators, pilots and students do. Select your navigation aids and instruments from the Weems Catalog. Send for it today. Weems System of Navigation, Annapolis, Maryland.

NEW Pressure Pattern Drift Computer $2.50; Model "G" New Computer, $7.50; Fairchild (collimated) Sextant Electrical Averager, ($200.00 Value) $17.50; New Improved E-6B Computer, $10.00; Weems Navigation Plotter, $2.00; AAF-type A-2 Computer, $2.00; American Airlines Computer, Improved Model "D" $6.00; Jardur Aviation Chronograph, $65.45. Stop watches, $15.00. (Free catalog.) Pan American Navigation Service, 12021-8 Ventura Blvd., N. Hollywood, Calif.

NEW Powerful VHF Transmitters. Skycrafters "Big Mike" BMT-2 three watts output with 2 crystals and antenna, $99.50. Kit with instructions for attachment to G. E., Hallicrafters, Motorola, etc. $9.95. Skycrafters Aviation Radio, 2453 E. Spring St., Long Beach, Calif. Phone 48-341.

GENUINE Navy Intermediate Flight Jacket, new, dark brown goatskin leather. Bi-swing back, two patch pockets, one inside snap pocket. Completely lined finest rayon. 100% wool knit cuff and waist. Zippered front. Sizes 34-46 only $32.50. (Write for free catalog.) We pay postage if payment accompanies order. C.O.D.'s upon request. No C.O.D.'s overseas. R. A. F. Mfg. Co., 2715 W. Madison St., Dept. FT-4, Chicago, Ill.

E-6B COMPUTERS, with 30 page direction booklet, like new $4.95, with leather cases $5.45 ($10.00 value). Money back guarantee. Kane Aero Equipment Co., 2308 N.E. 23rd St., Oklahoma City, Okla.

NAVY Pilot Jacket, Intermediate, new, genuine. Dark Brown goatskin leather, bi-swing back, two patch pockets, one inside snap pocket, rayon lined, mouton fur collar, 100% wool knit cuffs and waistband. Sizes 34 to 50. Price $32.50 each postpaid if remittance accompanies order, otherwise C.O.D. Flying Equipment Sales Co., 1641-5 W. Wolfram St., Dept. F, Chicago 13, Ill. See our display advertisement, this issue.

A2 AAF Jacket, horsehide or goatskin leather, rayon lined, zippered and wool knit waistband and cuffs. Size 36 to 46, $17.95 each, size 48 & 50 $18.95 each. New. Sent postpaid if remittance accompanies order otherwise C.O.D. Flying Equipment Sales Co., 1641-5 W. Wolfram St., Dept. F, Chicago 13, Ill.

L2A AAF Intermediate Jacket, blue nylon, quilted rayon lining, wool interlined, knit cuffs and neckband, size 36 to 46, new. Price $10.95 each. Sent postpaid if remittance accompanies order, otherwise C.O.D. Flying Equipment Sales Co., 1641-5 W. Wolfram St., Dept. F, Chicago 13, Ill.

BATTERIES & Tires: Brand new, for all type aircraft. Send for free list. Many other items. Write your requirements for quotation. Flying Equipment Sales Co., 1641-5 W. Wolfram St., Dept. F, Chicago 13, Ill.

HELMETS: ANH-15 AAF tan cloth, sponge rubber earcups, $2.00. A-11 AAF Kidskin leather, sponge rubber earcups, $3.45. Leather helmet with chip-cup, $1.50. White or tan cloth helmet, $1.00. White flying cap, 75c. New. State size. Flying Equipment Sales Co., 1641-5 W. Wolfram St., Dept. F, Chicago 13, Illinois.

LOW Cost VHF Transmitter with six crystal controlled channels, ready to install with any make low-frequency transceiver.. Air-Com VHF Transmitter, Model 300A only $98.95 complete to install, no extras. Write now for free brochure. Dealers write for protected franchise plan. Air Communications Company, 23 Main St., Hackensack, N. J.

BUSINESS OPPORTUNITIES

BUY Wholesale—25,000 items—Catalog 25c. Matthews, 1472-S6 Broadway, NYC 36.

FLORIDA Opportunities! Hundreds of jobs, businesses, farms, groves, ranches, homes. Free details! Florida Opportunity Bulletin, Box 456-F, Coconut Grove, Miami 33.

MISCELLANEOUS

A (14 x 18) oil painting of yourself with any plane you desire in the background. $25. Send photograph, color eyes, hair, suggestions. Don Woods, 370 Washington St., New Britain, Conn.

PHOTOS of aircraft from Wright biplane to latest jet. 250,000 photos in stock. Also old aviation books. Send dollar bill for six real photographs of the latest jets, plus the New 1952 catalogue. Aeroplane Photo Supply, Box 195, Toronto, Can.

YOUR Leather Jacket renovated expertly. Free circular. Berlew Mfg. Co., Dept. 2, Freeport, N. Y.

COLLECTORS! Grand new list ready! Old, new, aviation books. Genuine aircraft photographs. Send 25c for lists and samples. Airbooks 'F', Box 958, New Rochelle, N. Y.

PRINTED IN U.S.A.

Dad's *favorite* chair

Comfort and complete relaxation! Dad's found both in his TWA Skyliner seat . . . and lots more. He's found the magic key to covering territory, arriving fresher and, quite often, first. Best of all—and how the family loves this—a Skyliner seat lets Dad spend most of his evenings where he wants to be most—in his *other* favorite chair . . . at home!

Where in the world do you want to go? For information and reservations, call TWA or see your travel agent.

ACROSS THE U.S. AND OVERSEAS . . . **FLY TWA**

TRANS WORLD AIRLINES

U.S.A. · EUROPE · AFRICA · ASIA

FLY OMNI THE EASY WAY

accurately... AUTOMATICALLY

CESSNA 170

AERO-COMMANDER

BONANZA

PIPER TRI-PACER

CESSNA 195

BEECH L-23

NAVION

TAYLORCRAFT

Fly *Lear* OMNIMATIC!®
It's rugged...economical

Lear's *exclusive* Omnimatic picture scope points the way instantly to the station, quickly takes over a good part of your navigation problems! No computation. No coordination of course selector. No meters. Just tune and read!

You can have Lear Omnimatic with *19 different VHF combinations* – any of them easily adapted to your present or future requirements!

Whatever plane you fly, single engine or twin, you can start with a simple VHF system and add to it – "building block" fashion – to obtain a complete airline type navigation and communications system.

For example, the Lear LTRA-6 combination, with the Omnimatic system, is the deluxe package. It consists of VHF transmitter, VHF receiver, low frequency and marker beacon receiver, and Omnimatic . . . with the exclusive Lear Omniscope® that *continuously* and *automatically* shows the magnetic heading to the omnirange station! Lear Omnimatic can be adapted for VAR and ILS, too!

Now you don't have to fly omni the hard way. Insist on Lear Omnimatic for your present plane or, factory-installed, in your next new plane. Ask your Lear distributor or dealer for a demonstration or write today for literature!

COAST TO COAST
AIRCRAFT RADIO PRODUCTS
Sales and Service

LEAR, INC.

ONE OF THE WORLD'S OLDEST AND LARGEST PRODUCERS OF AIRBORNE ELECTRONICS

LEARCAL DIVISION • 11916 W. PICO BLVD. • LOS ANGELES 64, CALIFORNIA

Grand Rapids Division, Grand Rapids, Michigan; Romec Division, Elyria, Ohio
Lear International Export Corporation • 9 East 45th Street, New York 17, N.Y.